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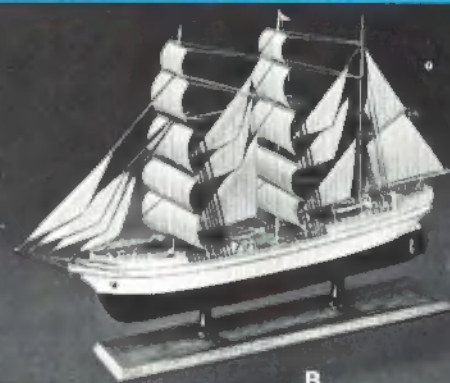
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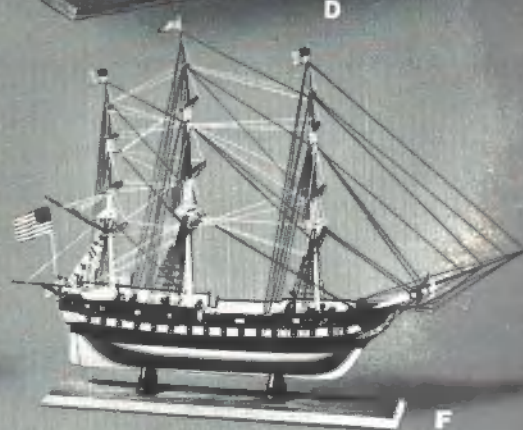
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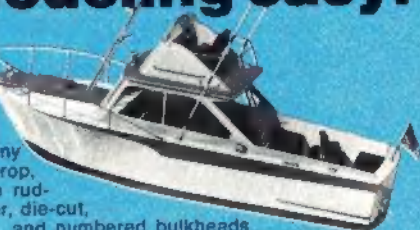


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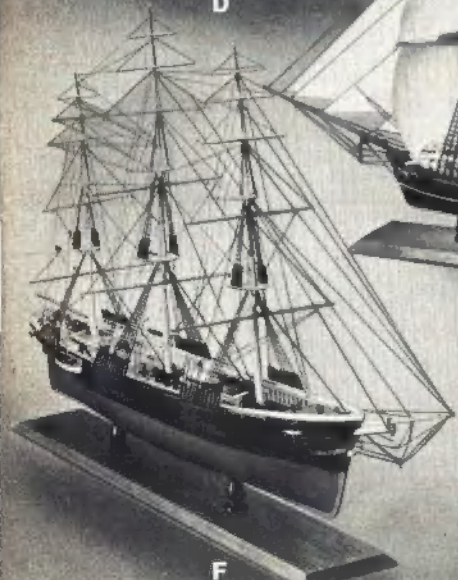
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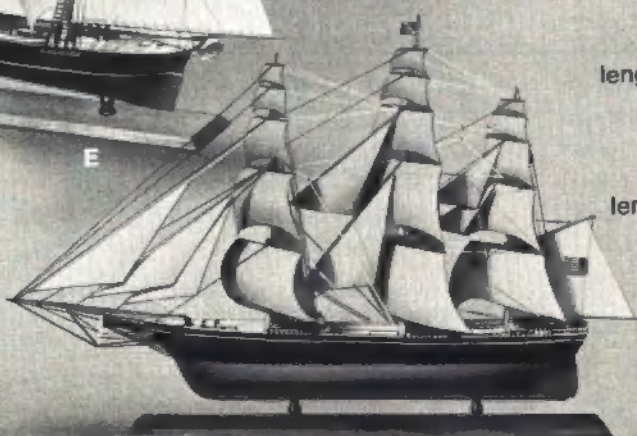
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american aircraft modeler

VOLUME 75, NUMBER 2

FEBRUARY 1975

COVER STORY

Hobie Hawk soars over the Pacific Coast, near where this totally prefabricated super sailplane is manufactured. (Photo courtesy Hobie Model Co.).



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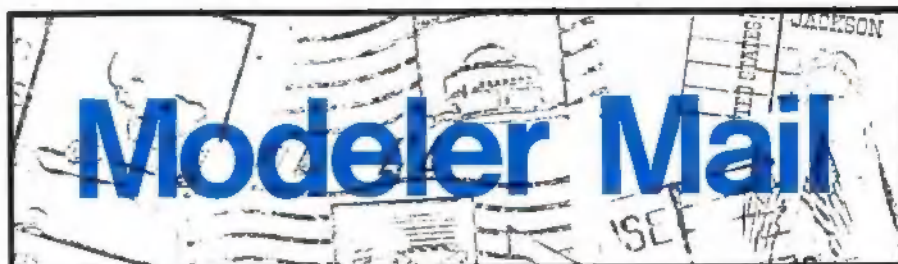
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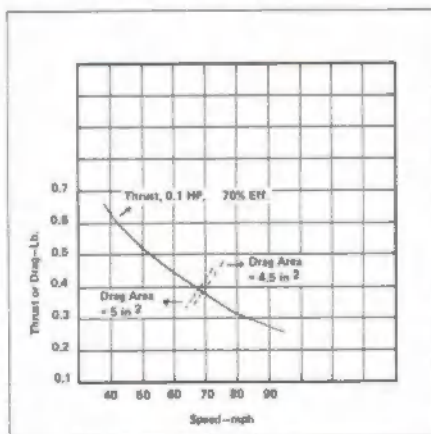
'Eyeball' Equations

In the October issue, a reader took exception with the "eyeball" estimate of 60-70 mph speed (6x3 prop) quoted previously for the "Pacer." The argument was backed up with some calculations based on rpm and prop pitch.

Propeller efficiency refers to the ability to convert engine horsepower to useable thrust and is not properly applied when used to correct some pitch value assigned to a propeller.

$$\text{Thrust (lb.)} = \frac{\text{HP} \times \text{Efficiency} \times 550}{\text{Velocity (ft./sec.)}}$$

The attached graph shows the thrust-velocity curve for 0.1 hp (estimated maximum for Tee Dee .049) and 70% prop efficiency. The available thrust for a given speed represents the



energy available to overcome drag. The maximum horizontal speed will therefore be determined by the drag of the airplane.

$$\text{Drag (lb.)} = \text{Drag Area (Sq. ft.)} \times \text{Dynamic Pressure (lb./ft.}^2\text{)}$$

The latter term is approximately $\sqrt{V^2 \text{ (mph)}}$

391 for flight near sea level.

The "Pacer" appears to be very "clean," particularly without landing gear or rudder-fin slot. If properly constructed and finished, it would

appear that the drag area should be no greater than five sq. inches and possibly as low as 4.5 sq. inches. Intersections of these drag curves and the thrust curve are shown on the graph.

It would appear that 60-70 mph speed for the "Pacer" is a very realistic estimate.

Relevant to maximum speed, it has been shown that for propeller driven airplanes the maximum speed obtainable varies approximately as the cube root of the hp/wing area ratio. Assuming that a landing gear would slow the "Pacer" to 60-65 mph, the following table can be made.

Type	HP	Area	$\sqrt[3]{\text{Ratio}}$	Max. Speed
"Pacer"	.1	.06	1	60-65
QM	.3	.15	1.35	81-88*
Form. I	1.5	.48	2.00	120-130**

Again, the 60-70 mph "eyeball" estimate does not appear to be excessive.¹ The only effective route to speed is horsepower and speed comes dearly. This is why the guys with the most powerful engines are winning the races.²

I hope this clears up the fallacy in the rpm x pitch x efficiency argument and serves as the better formula requested by the reader. I certainly cannot tell him how to get 26,000 rpm out of his engine.

$$\sqrt[3]{\frac{.15}{.06}} \times 60-65 \quad \sqrt[3]{\frac{.48}{.06}} \times 60-65$$

(1) Based on the fact that predictions of speed ranges of other classes do not appear to be "excessive."

(2) This and preceding sentence are of course limited to situations where minimum wing area is specified. Pure speed buffs make maximum possible use of the hp/area rule. As I recall, CL speeds (1/2A) in the 110-120 mph range have been achieved.

J. L. Brownlee
Decatur, Ala.

(Continued on page 103)

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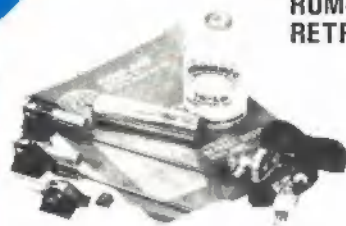
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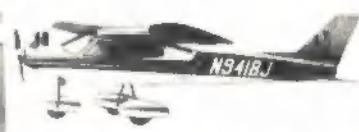


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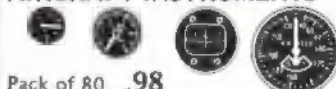
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Sunshine State

ON THE SCENE IN PARADISE, WITH BEAUTEOUS



Winning Scale by W. E. Borie (Rt. 2, Box 863N, Winter Haven, Fla., 33830) is glass-fused, original Stearman. Write him if you want complete details on the fuselage.



Robert Hyde captured second in Sportsman with his original Tiger moth. It sports a machined cowl and scale exhausts.

Down among the sheltering palms, AAM cosponsored the Greater Florida Biplane Championships in cooperation with the Remote Control Association of Central Florida. The RCACF annually hosts the famous Tangerine Internats, held between Christmas and New Years, and at their field near Orlando, I expected a "Hi, there, old buddy-buddy, where's yore two-whinger?!"

Although deep in the sunny South, accents melded from throughout the continent merged into a non-drawing "neutral" dialect, which betrayed the true Southern hospitality heaped on every visitor—competitor and spectator alike.

About a dozen contestants flew five rounds in both Sportsman and Intermediate Classes during the first day's activities. They used Jerry Nelson's NSPA rules which are "modeled" after full-scale aerobatic maneuvers, with a required 180° turn between each maneuver.

Pylons at either end of the field, 800 ft. apart, marked the boundary "window" for maneuvers which, ideally, would be placed in front of the judges. The current trend to high-powered aircraft (even in bipes) made it difficult for



CD Walt Schoonard shows off some of the AAM-sponsored hardware. Bob Heide's Liberty Sport wasn't one of the prizes!

contestants to contain their stunts within the allotted space. As rounds progressed, "throttle jockeying" became prevalent, with pilots slowing their ships to the much more scale-like performance required for NSPA competition.

Non-scale biplanes were permitted, with no bonus for scale, but a 10% reduction of flight score was stipulated for non-scale aircraft. A minimum entry prerequisite that the lower wing be at least 30% of the area of the upper wing was required, plus an effective silencer. It

was emphasized that the planes be in keeping with the spirit of the event, which stressed scale-like performance, instead of the high speed stereotypes found in conventional Pattern competition.

The relatively small turnout was disappointing to local club members, but the first NSPA event held in Chicago had only 15 contestants. So, for a brand new event, response could be termed enthusiastic. Spectators were on hand from as far away as Maryland and

Bipe Bonanza

PIPES AND BALMY WEATHER./BY HOBIE STEELE



Best Aircraft, based on workmanship, finish, flying and spirit of the event. A beautiful Pitts which was flown by Ernie Kraft.



ABOVE: W. E. Borie's original Great Lakes took first in Intermediate Class.

Puerto Rico. The Puerto Rican visitor's bipe was "plane-napped" by vandals shortly before they left for home, but like many others who weren't flying, their interest in the Biplane Championships was keen. Discussions on how best to fly the new Pattern were held constantly among the contestants.

Here's a list of the maneuvers flown.

Sportsman Class

- (1) Inside Loop
 - (2) One Roll
 - (3) One Turn Spin
 - (4) One-half Cuban Eight
 - (5) Immelman Turn
 - (6) One-half Reverse Cuban Eight
 - (7) Inside Snap Roll
 - (8) Inside Square Loop
- (180° turn after each maneuver required.)

Intermediate Class

- (1) 45° Climbing Snap Roll
 - (2) Hammerhead Stall
 - (3) Reverse Spin (one turn each way)
 - (4) One Outside Loop
 - (5) One Slow Roll
 - (6) AMA 180° Turn (see page 36 in Rule Book.)
 - (7) Vertical One-half Roll
 - (8) Four-Point Roll
- (Plus two freestyle maneuvers with 180° turn after each maneuver.)



Stand-off Scale competition for any aircraft (single or multiwing) was held Sunday morning, with Central Florida's popular Ugly Stik races in the afternoon.

W.E. Borie from Winter Haven, Fla., took first in Intermediate with his original Great Lakes Trainer.

Jim Hyde had the highest single score and a first in Sportsman with his Acrostar—his first contest, too! Jim's

dad, Robert, captured second with a beautiful, original Tigermoth in his first competition in 30 years. Third in Sportsman was John Agrew, from Ft. Myers, with an Aeromaster.

Ernie Kraft from Boca Raton, Fla., won Most Outstanding Aircraft with his version of Jerry Nelson's Pitts design, while W. E. Borie's fiberglass-fuselage

(Continued on page 104)

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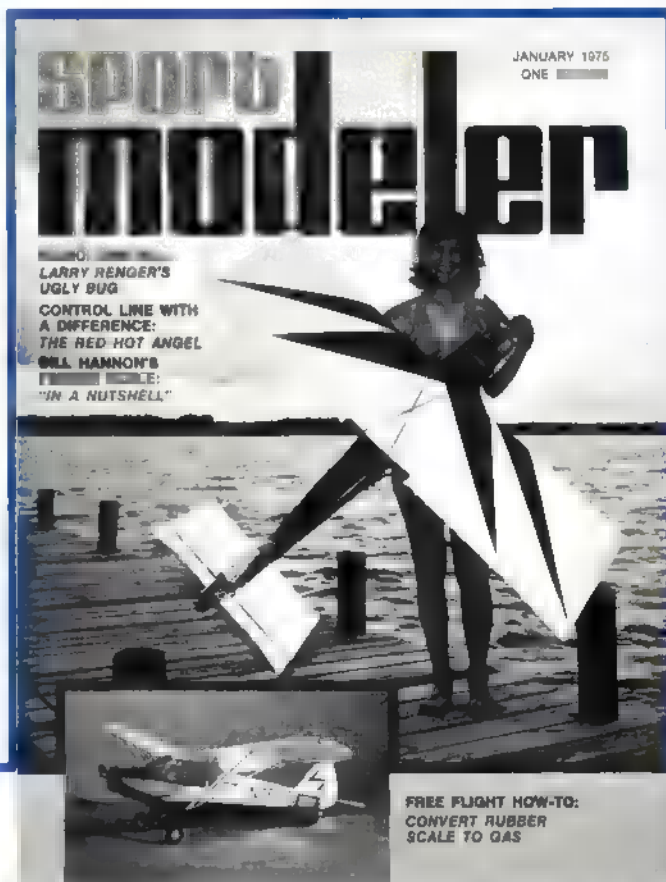
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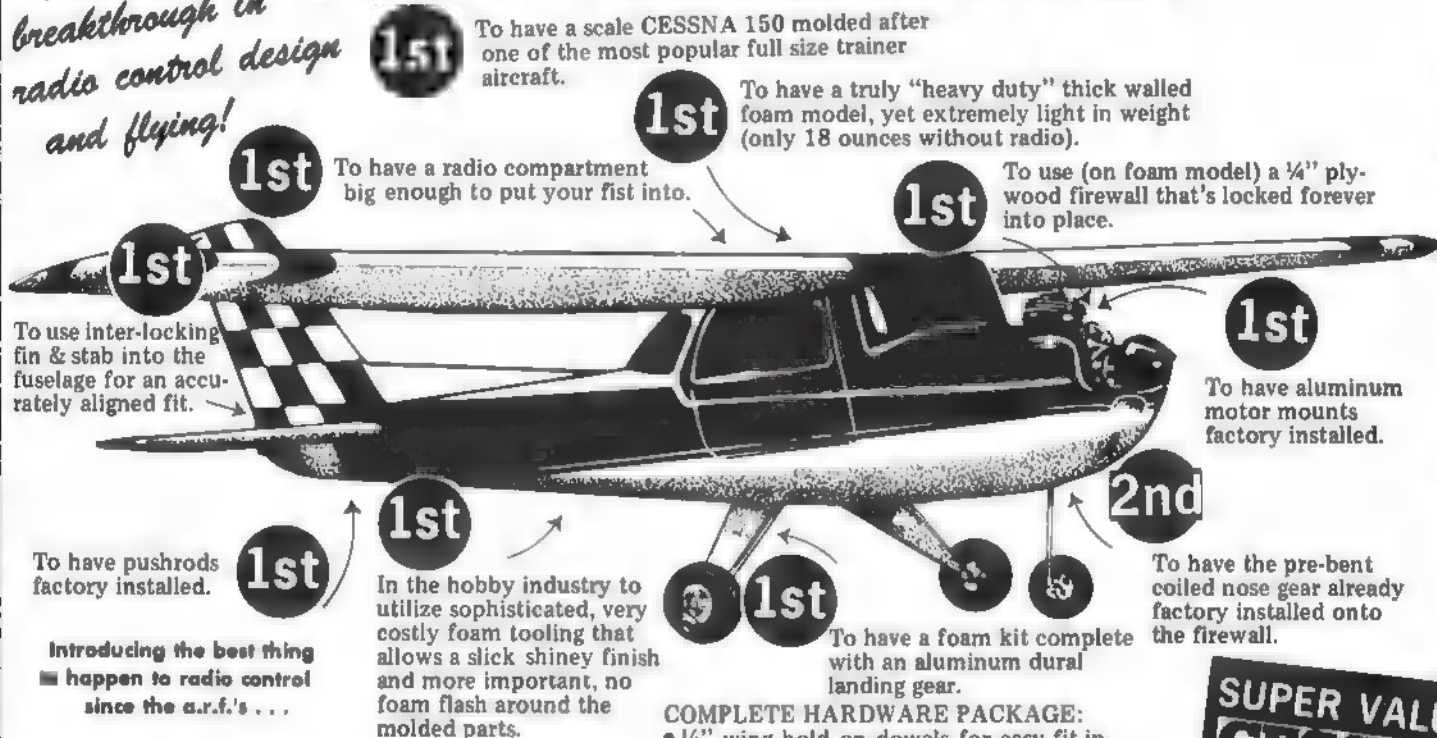
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- 1/4" wing hold on dowels for easy fit into factory drilled holes on fuselage.
- two 6/32X1" bolts and four 6/32" hex nuts
- four self tapping 440X3/8" motor mts. screws
- ■ hinges
- all pushrod hardware
- elevator connector and horn
- four no.4-x1/2 landing gear hold-on sheet metal screws
- hardwood servo rails
- four blind mting. nuts (installed) for motor mts.
- full set die cut special vinyl windows
- registration numbers printed
- clear vinyl.

PLUS YOU GET: • full size highly detailed easy to read plans • foam finishing instructions • fuselage pre-assembled at factory • ■ piece fullsize wing • factory installed landing gear blocks • factory installed cabin floor.

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CESSNA
150**

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ALL FOAM KIT**

Last month at this price!

Hobby Shack's CESSNA 150 TOTAL PAK

a complete radio-controlled beginners/sport flyers dream come true.

You Get: A three channel radio system with either ■ or ■ servos, all factory installed, a Cox Medallion .09 engine, factory installed, a 3oz. fuel tank & fuel line all factory installed, plus pushrods and linkage are all factory installed. The CESSNA 150 plane is factory assembled with 5 minutes of finishing touches left for you to complete.☐

TOTAL PAK

3CH./2servos (dry) .09 std. med. engine.

\$139.99

TOTAL PAK

3CH./3servo(ni-cad).15r/c engine, charger.

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Designed for flying fun,
not building time.

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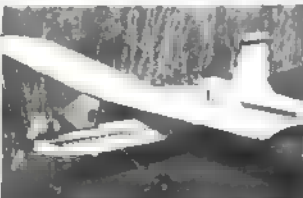
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- CLEAR
- YELLOW
- ORANGE
- BLACK
- RED
- LT. BLUE
- DK. BLUE
- AQUA
- SILVER



Colors do not fade or peel and the material is absolutely fuel proof. FLITE-KOTE shrinks at relatively low temperatures and goes around corners quite easily. 10 colors to choose from.

Discount Price **\$3.99**

SST Super Sport Trainer



A truly fine balsa kit, great trainer with good stability. Span: 51" / area: 510 sq" / disp.: .09 to .15+ / radio: 2, 3 & 4 channels (opt. aileron)

Only **\$22.88**

Little Gasser



New fun/sport ship for .049+ power. 42" span 275 sq" area for 2 and 3 channel radio gear. An all balsa kit.

Special **\$11.99**

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A most complete book on the subject. Over 250 pages of "how-to" and much detailed information. Send for yours today!



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\$9.95

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Prices good until 1974 inventory is depleted.

3 CHANNEL RADIO SYSTEM

3 channel Tx, single stick with trims, and 3rd channel lever for throttle, 3 channel Rx, with 2 servos dry (pencils). You get full 90 day warranty service at Hobby Shack.



SUPER VALUE **\$74.88**

4 CHANNEL RADIO SYSTEM

4 channel trans with 2 stick control, motor and trim - charger & Ni-Cad rechargeable pack and 4 channel rec. w/ 4 mini servos, ultra light IC - recharge airborne Ni-Cad pack and full 90 day, earth choice 12 or 12 1/2 watt.

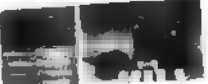


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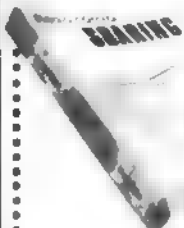


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Special **\$11.99**

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A most complete book on the subject. Over 250 pages of "how-to" and much detailed information. Send for yours today!



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Modeler's Bookshelf

by James Nordhoff

HOW TO DESIGN AND BUILD FLYING MODELS

by Keith Laumer,
224 pages,
Harper & Row

While the beginner finds something of value in almost everything he reads, and the expert is closer to writing books than learning from them, the average middle modeler must search hard to further his education. The recently revised *How to Design and Build Flying Models* is a good place for him to start looking.

Its longest chapter, devoted to model design, gives the reader all the information he needs to take the first steps into this interesting phase of the hobby.

Clearly and concisely, Laumer discusses airfoils, wing shapes, basic proportioning and the actual putting-down-on-paper of original designs. Although the emphasis is on FF, everything he says applies equally to CL.

Another valuable chapter reverses this emphasis. "Retract That Gear!" offers 20 pages of inspiration to the CL flier who wants to set his ship apart. The techniques discussed are for tinkers and "builders," but they are clearly stated and explained with excellent illustrations, so that anyone willing to spend a little extra time can add the realism and performance of a cleaner configuration by following the advice given.

Bowing to the inevitable, the author includes a section of universal value, if not appeal. "Rebuilding a Wreck" provides a general and cheerily optimistic guide to putting the pieces back together after gravity triumphs. The book is written in a light, even witty, style, and contains excellent and numerous illustrations. Well worth its \$6.95 price

tag, it deserves shelf space in the modeler's library.

Two for the WWII scale buff.

Fight for the Sky, by the one-legged RAF ace, Douglas Bader, is the story of the Spitfire and the Hurricane. Written with British restraint, the text emphasizes the Battle of Britain, but the book's real value lies in its remarkable illustrations. In addition to hundreds of black and white action photos, there's a section of color studies of these two famous fighters which must be the finest ever collected in a single volume. You can hear the Merlins roar. 190 pages. Doubleday, \$10.

Nights of the Black Cross, by Joseph Mizrahi, does the same job for the Me 109 and the FW 190, although its focus isn't quite as tight because of the multi-front war the Luftwaffe fought. Containing many first-hand accounts by leading aces, the text is fascinating. But here again, the pictures steal the show. Hundreds of black and white action

(Continued on page 104)

Le Petite Lepere

by C. E. Roth

Have you ever seen 1/32" sq. basswood? Incredible! This kit has the best and most plentiful materials east of the Mississippi. . . or west of Ol' Miss. . . or on it.

Take the kit,* one copy of the September, 1974, *AAM*, a pinch of Titebond, generous amounts of patience and

*Kit available from Lee's Hobbies, 11902 Labella, Sunnyvale, Calif. 94087 for \$2.75; or from Peck Polymers, FAI Distributors.

mix together. Result: A fine Peanut Scale Lepere.

Clear, printed bond sheets with ribs, formers, struts and other parts are rubber-cemented to 1/32" and 1/16" sheet stock. Cutting out the parts is simple—not a broken one, thanks to the cemented sheets. The instructions and plans are good for the basic structure and assembly. I added a gusset here and there in the wings and fuselage, and ran the landing gear wire up to the fuselage. But the basic design is good.

With the Lepere article by Patricia T.

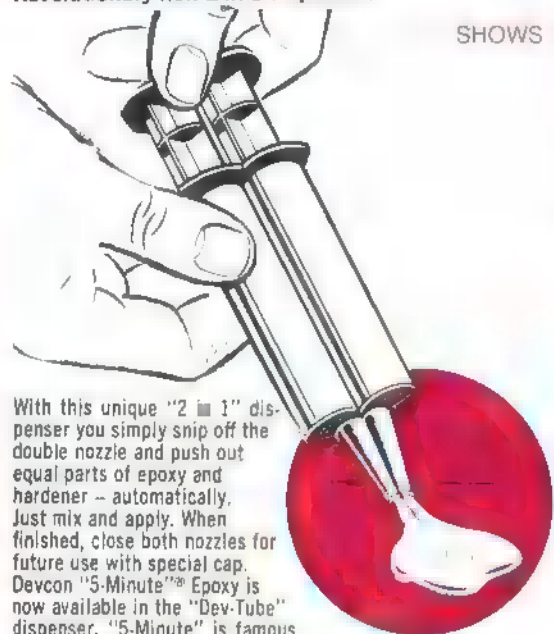
Groves, photos of Floyd Carter's RC model, and the scale drawing by Monty Groves, I went overboard. . . scale camouflage (a patchwork of an infinite number of tiny pieces of brown and green tissue), insignia, Marlin machine guns for the pilot, and Lewis guns for the observer. With Sig thinned Lite Coat, no warps at all and a nice looking finish, it's truly a scale buff's delight.

The model lined up very well and went together nicely. Without the extra detail, it should weigh in close to 1/4 oz. All up, mine weighs 1/2 oz.



LEFT: Leperes everywhere and of every size. Floyd Carter's original (September, 1974, *AAM*) won at the Pioneer's Scale Jamboree in September. This pint-sized version is a winner, too. RIGHT: Roth's petite Lepere is replete with guns and even scale camouflage finish.

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R-206 2 1/2 oz 2.50

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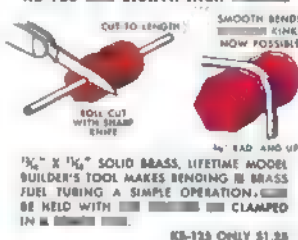
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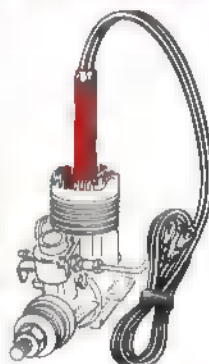
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EXTINGUISHING THE ISSUES



(This Editorial is *Airline* reply to Jack Fraher's Guest Editorial, as it appeared in our January issue. I suggest to our readers that they refresh their memories on his "burning issues" before they read this reply, since I will not have space to quote extensively here.)

Mr. Fraher has raised some burning issues with which, quite frankly, this reply can only begin to come to terms. Many of the points raised are matters of personal taste and pre-

(Continued on page 85)

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Specifications

Weight	30 (less R/C gear)
Wing span	30 inches
Wing area	590 sq. inches (4.1 sq. ft.)
Wing loading	9.2 ounces (W/B Oz. R/C)
Overall length	42 inches
Color choices	White, Yellow, Orange

Price

\$ 99 (Finish-it-yourself Kit)
\$129 (Completed. Just add R/C gear)

miniature sport rc

New ultra-light equipment offers the sport flier new avenues of enjoyment. A local schoolyard and a small model add up to hours of enjoyment. / by Don Srull



Mark Srull fires up his Dick's Dream. Vacant lot flying is the goal, and miniaturized RC equipment is the key to this end.

The recent introduction by Cannon Electronics of their 5-oz., two-channel Tini-Block system ushered in a new era of sport RC flying. The Ace Digital Commander is another example of this new breed of radio. To be sure, these lightweight systems will be used extensively in the more conventional two-channel applications such as gliders, cars, boats, etc. Their remarkably low weight, however, makes them ideally suited for use in compact sport aircraft which can easily be flown in restricted flying areas. Backyard flying is really here!

Apart from the obvious advantages of sport airplanes which can be safely flown in schoolyards, baseball fields, and even backyards, compact 020-through 049- powered models are also economical, compared to larger, higher-powered models. This means that a much wider selection of sport airplanes, both in size and kind, is available to all modelers, including beginners.

After obtaining a Cannon Tini-Block radio, we made a quick survey and discovered that it was ideally suited for a

large number of kits and magazine plans. While small radio systems can be used with airplanes powered by almost any size engine (or no engine at all), their usual application for sport flying will probably be with airplanes using the readily available 020 and 049 glow engines. For that reason this discussion will concentrate on this class of airplane.

One of the most important parameters in selecting and building a good model is its wing loading, i.e., the total weight of the model, compared to its wing area. Wing loading is often measured in ounces per square foot. The modeler has control over this in the size of model he selects, the payload he puts in it (where the Tini-Block does its share), and how light he builds and finishes the airframe. One often hears the claim that any extra weight in a model can simply be overcome by using a larger, more powerful engine. Don't you believe it! Although an expert flier may be able to fly a smooth brick with apparent ease, the heavier the wing loading, the more difficult and tricky a

model becomes as the weight increases for the average or beginning flier.

Some of the important negative aspects of increased wing loading are higher takeoff and landing speeds, less maneuverability, and a more violent and quicker stall. Each of these characteristics is exactly what a good, safe sport model should not have, especially if it is intended for use by a relative beginner in RC. These factors also mean that larger fields are needed for safe flying, and poor landings or minor crashes will more likely result in major damage. One application where increased wing loading is actually necessary is in slope soarers, which fly in rather strong winds. In this case, higher wing loading is necessary to raise the glider's wind penetration speed to acceptable levels. Since little sport models are not generally flown in high winds, especially when using small fields, we can ignore this "disadvantage."

For sport flying from very small and restricted flying areas, try to keep the wing loading below 10 oz. per sq. ft.—the lower the better. For generally

good sport flying characteristics, safe for beginners to use in modest sized areas, keep the wing loading under 14 oz. per sq. ft. For an 020-powered airplane, ■ wing area between 100 and 200 sq. inches, if built reasonably light (under 20 oz.), will achieve the above wing loadings fairly easily even when carrying a 5 oz. radio. Wing areas from 200 to 300 sq. inches are about right for conventional 049-powered models. For powered glider type models, 049s can handle up to almost 500 sq. inches of wing area. For these models, wing loadings down to 5 or 6 oz. per sq. ft. are possible.

I have listed some of the commercial kits that I have found to be easily adapted to using the new, lightweight two-channel systems. These kits, with a minimum of adapting, will provide very easy-flying sport and scale-like models. If you would like to try something ■ little more daring, here are two choices for super-performing miniatures: (1) Top Flite's "Roaring 20" kit is a 20" span, 100 sq. inch model using a Tee Dee 020 engine, and is fast and maneuverable. (2) If you prefer to build your own, try Dave Robelin's Prophet, a design featured in the July, 1967, AAM. The Prophet is ■ small, Tee Dee 020-powered, low-wing, stunt model, designed around Dave's miniature Simpro I pulse system. The span is 24", and Dave uses aileron and elevator control in the fully stuntable little jewel. His radio system, incidentally, weighs almost exactly what the Cannon Tini-Block does. Prophetic, just as Dave claims!

For those who would like to try ■ small, two-channel model, I will outline the specific modifications of two of the kits listed—the Ace Dick's Dream and the Guillow Stuka. The Ace kit is representative of the simpler sport model installations, while the Stuka involves ■ little more work, typical of the compact stick and tissue scale kits.

For use in 010- through 049-powered airplanes, I mounted the receiver brick and servo on an approximately 1 x 4" piece of 1/16" plywood as shown in Fig. 1. This system is light, compact, and the transfer from one plane to another is quick and simple. The 1/16" foam servo tape provides ■ minimum of vibration isolation, but enough for 010 and lower power 049 engines. If you plan to use 049, 010 and even larger

FIG. 1 TINI-BLOCK INSTALLATION FOR .01 THROUGH .049

NOTE: IF USE IS PRIMARILY FOR .049 AND LARGER ENGINE MODELS EQUIPMENT SHOULD BE MOUNTED ON BUILT-IN LUGS WITH GROMMETS

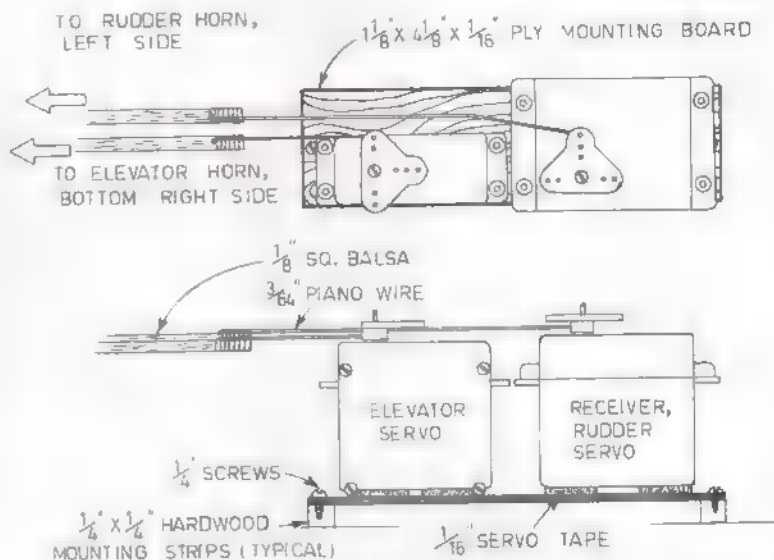
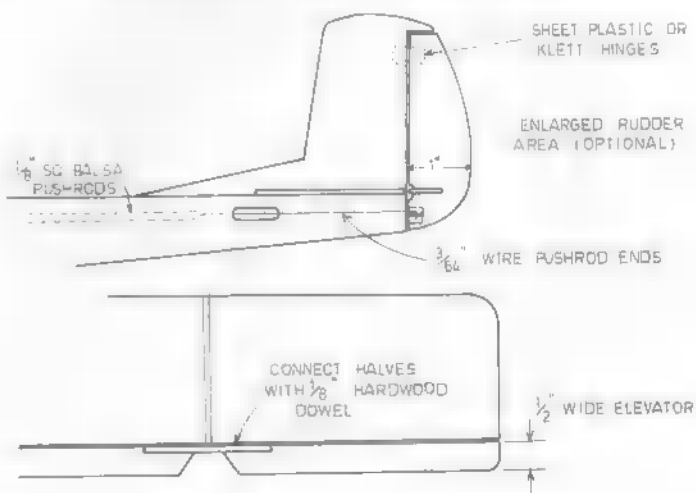


FIG. 2 ACE DICK'S DREAM MODS

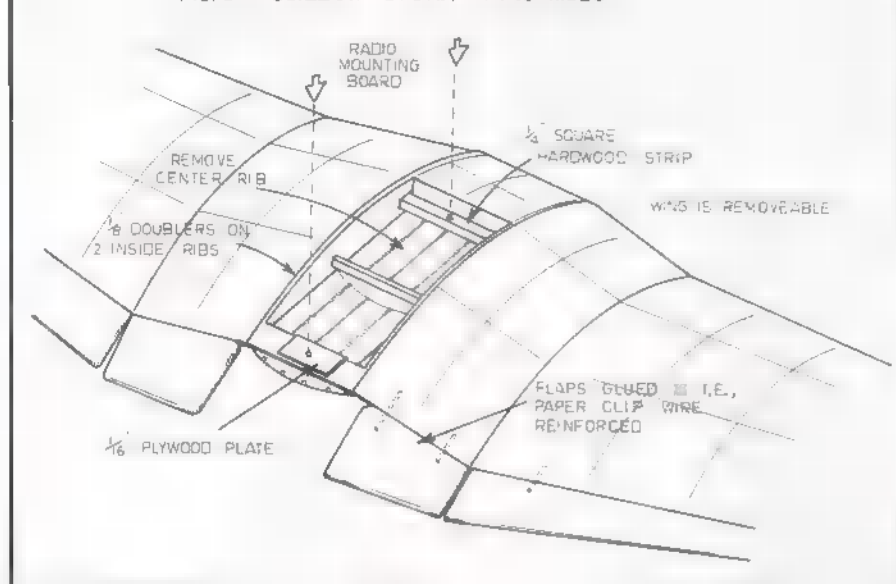


engines, I would recommend a more conventional receiver/servo tray made of 1/16" or 3/32" plywood, in which the servo and receiver are attached by their mounting lugs and through rubber grommets. This form of mounting eliminates engine vibration much better and will reduce chances of damaging your radio gear.

For pushrods, hard 1/8" square balsa was used, with 3/64" piano wire ends (actually, paper clip wire is strong

enough, and can be bent more easily). Minor adjustments in length are made by bending the wire. The pushrod ends were simply retained in Goldberg short control horns by small pieces of plastic or aluminum tubing glued in place. If you prefer, you can use the standard adjustable clevis arrangement at the control horns. For hinges on these small models, I find that either the thin sheet plastic hinges, or the small Klett hinges work very well.

FIG. 3 GUILLOW STUKA WING MODS



The Dick's Dream with a Tee Dee 020 makes a zippy sport model. This featherweight tips the scales at a mere 12.3 oz., ready to fly. Light weight insures maximum performance.

MINIATURE TWO CHANNEL RC SPORT FLYING

TYPE	KIT	ENGINE	SPAN INCHES	AREA SQ.IN.	TOTAL OZ.
Trainer and Sport	Ace, Dick's Dream*	02	34	165-190	11-13
	Top Flite, Schoolboy	02	27½	155	10-12
	Goldberg, Ranger 42*	049	42	240	23-27
	Goldberg, Jr. Falcon	049	37	250	20-22
	Sterling, Mini Mambo*	049	36	220	18-20
	Ace, 2T*	049	50	260	22-24
	Ace, Warbird	049	42	225	18-20
	Midwest, Lil Tri Squire*	049-10	40	320	25-28
Scale or semi-scale	Guillow, SE-5	02	24	190	13-16
	Guillow, Stuka	02-049	34	185	12-14
	SIG, Fairchild 24*	02	36	190	12-14
	SIG, Piper Supercruiser	02	35½	170	12-14
	Sterling, Citabria	02	33½	165	11-13
	Jetco, Rearwin Speedster	049	38	200	14-17
	Jetco, Piper Supercruiser*	049	40	215	14-18
	Midwest, Cardinal*	049-10	46	275	24-26

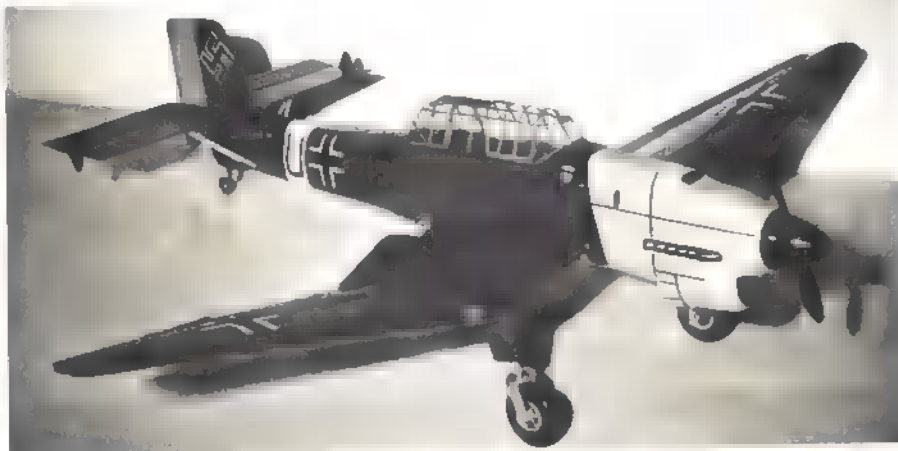
*Good for first models.

The changes required for the Ace Dick's Dream are minimal. The radio/servo board can be screwed to two pieces of ¼" square hardwood strips glued to the cabin floor. An elevator of about ½" chord is cut from the sheet balsa stabilizer, and the two halves joined with a 1/8" hardwood dowel. The rudder on our model was enlarged to a 1" width, but this is not essential.

Our 12.3 oz. model performed well on a Tee Dee 020, although a good Pee Wee 020 would be adequate for a beginner.

We tried something during our flight tests with this model that may interest the relative newcomer to RC. In order to slow the model down for beginners, we bought one of the larger, constant chord foam wings by Ace. This wing has the same span, same airfoil and root chord as the tapered wing that comes in the kit, but it has somewhat more (190 sq. inches vs. 165 sq. inches). The slightly lighter wing loading and higher drag of this wing made the model noticeably easier to manage for a beginner. I recommend this as a first model.

The Guillow Stuka required a little more care and planning to install the two-channel radio. Once we decided on the scheme shown in the photographs, however, it almost seemed like the radio and model were made for each other. Basically, the wing was made removable and the receiver-servo board was attached to the top of the wing center section as shown in Fig. 3. The basic structural changes in fuselage amount to trimming the fuselage bulkheads and keel pieces which form the wing saddle, so the radio will slip in place. It is then a good idea to add doublers to reinforce the wing saddle pieces. We also reinforced the nose section a bit to carry the weight of the batteries. A Tee Dee 020 was mounted inverted so it wouldn't stick up out of the cowl. This certainly isn't necessary, although it looks much better. The Tee Dee 020 flies the Stuka just about right. A Pee Wee 020 may not be adequate unless it is in very good condition. A Baby Bee 049, as shown on the kit plans, would be fine, provided you used an oversize prop, mounted the regular prop backwards or plugged the intake to reduce the thrust. The full power of an 049 would turn the model into an over-powered, and difficult-to-fly speedster.

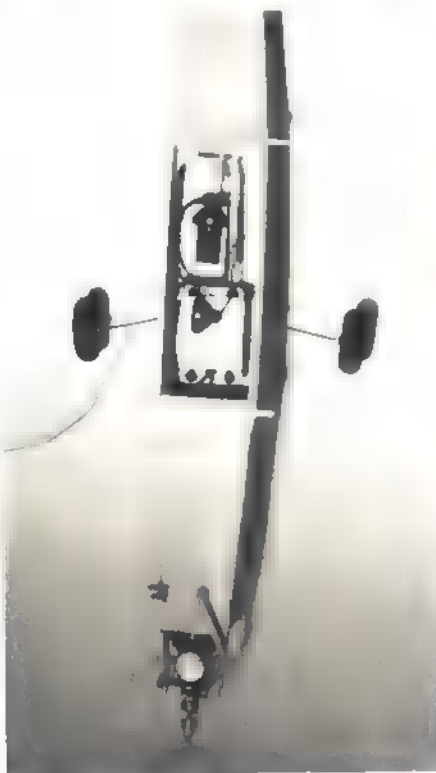


Shades of Scale realism! Giulflow's Stuka, a kit usually thought of in terms of rubber power, converts to RC easily. Good in-flight performance. Schoolyard Scale—a new event?!



ABOVE: The gull-winged little thing holds the radio in fine style. Wing is removable just like any other RC model. Transports in a large suitcase.

BOTTOM: Tini-Block fits easily in the Dick's Dream fuse. Simply servo tape everything down. Ace's Digital Commander also is ultra-light and suitable for such applications.



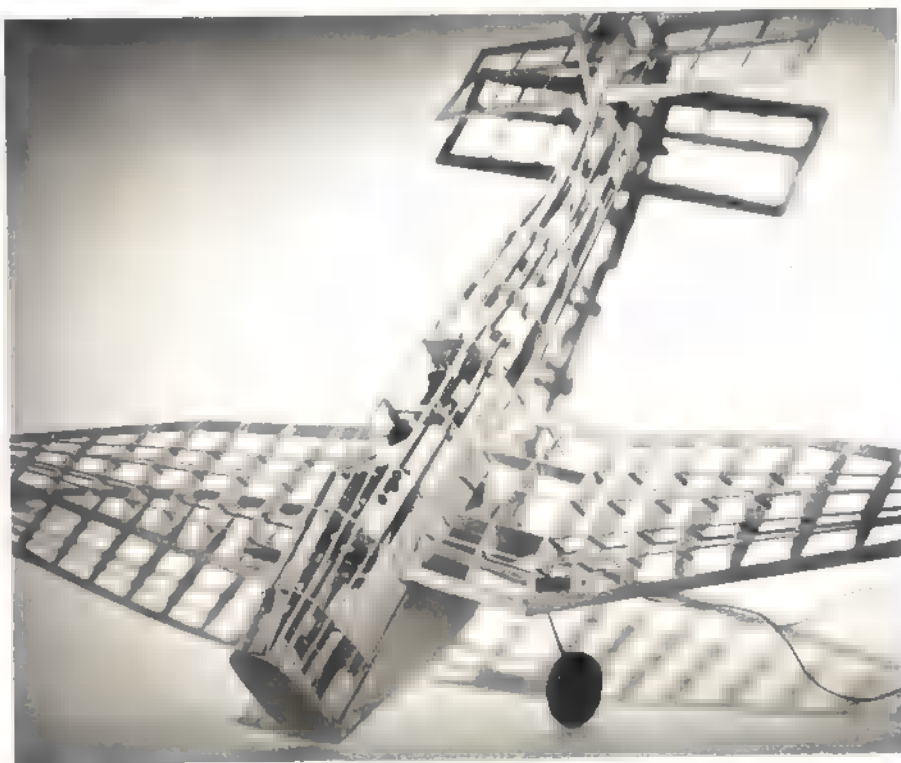
A spinner and scale prop were built up for display, but normally flew the model without a spinner.

One other change was made in the interest of flyability. In order to maxi-

mize the wing area to keep wing loading down, the sheet balsa wing flaps and ailerons were attached directly to the wing trailing edge. In the kit they are supposed to be attached in a scale-like fashion below and somewhat under the rear of the wing. On the full-scale airplane this was done to obtain "slotted" control surfaces. I was not sure they would help the model, so I glued them directly to the wing trailing edge and anchored them with short lengths of paper clip wire. In this way the wing area is a full 185 sq. inches, and the airfoil camber is adjustable.

Hinge the tail surfaces per the kit instructions and keep the paint job light. Our completed model weighed in at 12.8 oz. ready to fly. Since we normally fly from grass or dirt fields, the Stuka was built with the scale landing struts as detailed on the plans, minus the wheel pants. The plastic wheel pants were finished and split, so they could be slipped on for display purposes. With a well-tuned Tee Dee 020, the Stuka is a very scale-like flyer. It is a very attractive model, and most impressive in flight.

For such a small investment in time and dollars, it would be hard to beat either of the above model and radio combinations for pure fun; especially when you consider that they make the corner lot of your backyard a potential airfield. Give it a try.



Them bones, them bones, them balsa bones. Framed-up Stuka with radio in place.

Comfort-contour for a grip and fatigue-free

Angled antenna mount for optimum transmission

Control sticks with knobs

Check door

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Part Two

THE SEQUEL



The pattern ship designed with you, the builder and flier, in mind.
Conclusion of a two-part, step-by-step construction article.

by Carl Weber

*(Last month, we left you with a very promising, but not very complete, Sequel. As mentioned in Part I, this design is a top performance pattern ship which is presented for those who aspire to aerobatics, yet have not built a competition machine before. This bird will keep up with the best of them at any level of contest work.—php)**

At this point, you should have a complete fuse, stab and wing. Let's pick up the construction sequence with the fin/rudder assembly.

**See the Plan Service page for the price and ordering information on the Sequel plans. In last month's AAM, Mr. Weber suggested that the builder get two sets of plans and use one for templates, thus our listing with a special price for a duplicate plan set.—php*

Rudder: Tail feathers from 3/4" balsa stock? Egad, there must be a better way! Use super-light balsa! It needs to be thick to allow for the internal mechanics of the flying stab. But there is a side benefit. The thick section keeps the drag back where it should be, and the airfoil shape makes the rudder more effective. I know I'll get an argument from Joe Bridi on this one! Any sane guy would build this structure of foam and plank, or build it up with ribs—but my kids have fun with 3/4" circles of balsa!

Invert the fuse, place Saran wrap over wing saddle, and line up the wing by pinning it to the saddle. Check for trueness by using the pin method, and triangulate from wing tips to fuse center line at rear. Keep it true. Add LE dowels and hold down bolts. Build up the under-wing structure as per plan. Plane and sand like crazy until it fairs into a nice fuselage. Now, just hang the goodies in and on, set her on her feet,

lay on the canopy and step back. It won't be long now!

Saran-wrap the wing center section carefully and start building the wing fillets by epoxying the 1/32" form to the side of the fuse. When that is set up, add the 3/32" ply piece to each side of the fuse at rear of wing. Now build up Epoxolite to the general shape of a fillet. When this has set up, finish the fillet with Glidden's Spred Patch, and a wet finger. When this material dries (1-2 hours), it sands like corn flakes, but remains strong and smooth. Better to use several coats, applied thinly, than to gob it on.

Finishing: Let me share with you one of the fastest, strongest, and neatest methods of finishing an airplane. This finish has a high resistance to knicks and dents, adds great strength to the airframe, is easy to patch, and is quite acceptable in appearance. First, go over the entire plane with a good, open grain 220 grit paper, lightly knocking off any

glue blobs, or high spots. Remember, the basic shapes already have been obtained using 80 and 100 grit, ■ don't sand too heavily, especially around the glue lines. Now use 300 or 320 grit and go over the entire plane once again. Wipe down, vacuum all open spots and crevices, and tack rag the whole works.

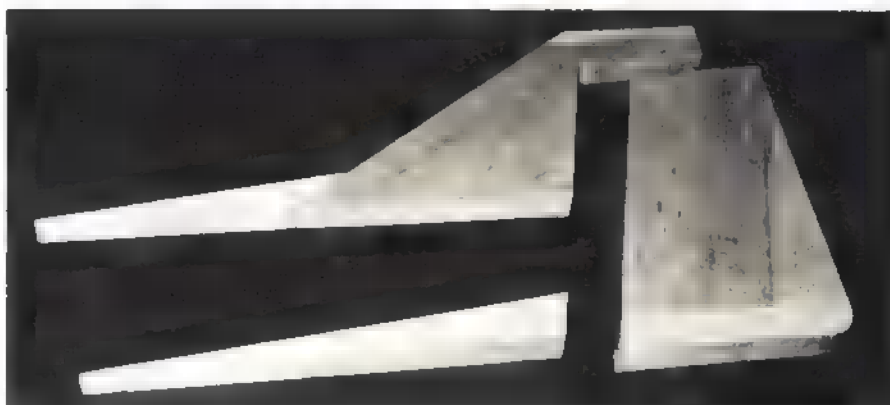
Working on a clean table with rubber foam protection, cut Silk Spun Coverite pieces, about 1" oversize for the part you are to cover. Set your sealing iron at a very high temperature, just so it does not melt the Coverite. Tack on two ends, pulling slightly and evenly. Now tack down along a side edge, then tack along other side edge. Firmly press all edges while applying pulling pressure around edges. This material will stretch in all directions and go right around highly compound tips. Trim off excess with a sharp razor or knife. After trimming, hot-seal the little raised edges firmly ■ the balsa.

Now, go over the entire surface with the hot iron and watch this stuff turn your flimsy balsa into a tough, resilient surface. Contrary to the light touch you use with MonoKote, bear down on this stuff so that it adheres to all surfaces of the balsa (do not cut or scribe lines into soft balsa by pressing too hard). When cool, you'll step back and have to admit you are really impressed. **DO NOT SAND** at this point, since it will only raise fine hairs from the surface.

Mix your favorite clear dope to brushing consistency (I use Ambroid and Ambroid Thinner), and brush on one coat. After about 2 hours, spray on a light coat of Ditzler Primer-Surfacer Lacquer base, if you go that route. Now sand most of the Surfacers off with dry 220 wet or dry cloth. Put on another coat of Surfacers and sand again with 220, finishing with 300 or 320.

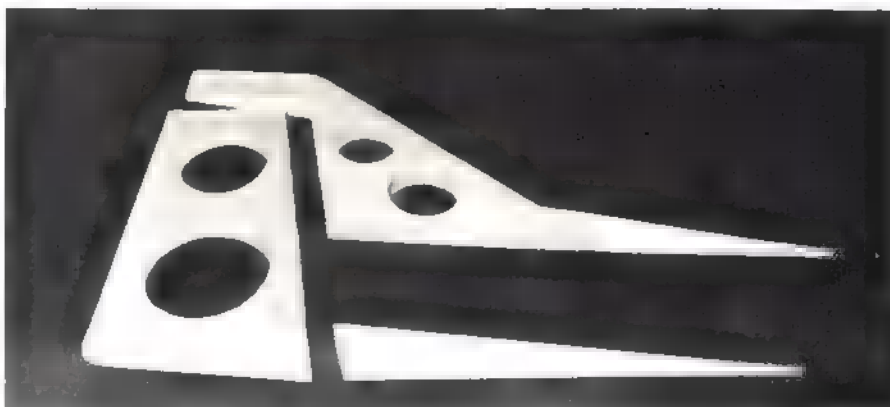
By the way, be certain to plasticize the Ambroid and the Surfacers with additive (I use Souther Products Plasticizer, two tablespoons per pint, unthinned). This keeps the Primer from pulling away from the fillets. By now, you have a beautiful surface. If you see any dings or slight imperfections, get out the Glidden Spred-Patch and trowel on. When dry, sand off smoothly and hit these spots with the Primer once more, then sand lightly.

Tack rag the whole thing and put on your final base coats. I use Butyrate



ABOVE: The fin and rudder are built from ultralight 3/4" balsa. This ■ time and effort.

BOTTOM: A good workout with the sanding blocks will give the fin and rudder a nice shape. The lightening holes are essential, and ■ ■ done with a drill or jig saw.



Secure the fin along the datum line drawn on the top of the fuse, and make sure that it ■ perpendicular to the stab. Use a draftsman's triangle to ■ accuracy.

Dope and do it all in one night, starting with a mist coat, then going over with another and another and another. Don't build up the finish, since you are only adding weight; just fully color the surface with the base coat.

Next night, lightly sand the base with 400 wet, tack and apply one more coat of base color. In good drying weather, you can stripe three hours later.

If you choose to use a see-through canopy after applying Primer-Surfacer, carefully mark out location of the canopy on fuse top. Epoxy on any instrumentation, headrests, simulated radio equipment, etc. Now, roughen up the edges of the canopy, inside and out, about 1/8" with 120 grit. Be careful not to scratch the upper sections of canopy. Now tack canopy over scribed lines with 5-min. epoxy, being careful that the



This is probably the most critical step in building a straight airplane. Check that the wing is centered on the fuse, and that it isn't skewed longitudinally. Measure at least twice here.



At last, an airplane. This is usually the "hump" for most builders—once you're past this point, you just can't stop until the plane is ready to fly. ■ don't let haste lead to sloppiness.

epoxy glue "strings" are not attracted (by static magnetism) to the clear part of canopy. Tack in about six or eight spots.

Run a rim of masking tape 3/16" above joint of canopy and fuselage, and now finish a nice bead of epoxy around entire edge of canopy. When set, apply a nice fillet of Epoxolite, scraping off the excess, and not worrying at this time about a super-smooth finish on the fillet.

When set, get out the trusty Spread Patch, and spread evenly between the canopy and fuselage. When thoroughly dry, sand and blend.

Now remove masking tape and re-apply a new mask (about 1/16" above the old line), and lightly sand with 320. Quickly apply a thin coat of Ambroid clear to seal around tape. Cover balance of clear canopy with aluminum foil and masking tape. Now spray on the final touch of Primer Sealer around the canopy. Sand out when dry. After this, you are ready for the base color coats as previously described.

When the base coat is set up, and you are happy with the looks of the plane, remove the canopy mask by pulling back over itself. The whole covering process, primer coats and base coats,

add only 6 oz. to a big pattern ship like this, if done properly. Strive for a thin, tough, durable finish which looks like an airplane, not a super rubbed-out hot rod!

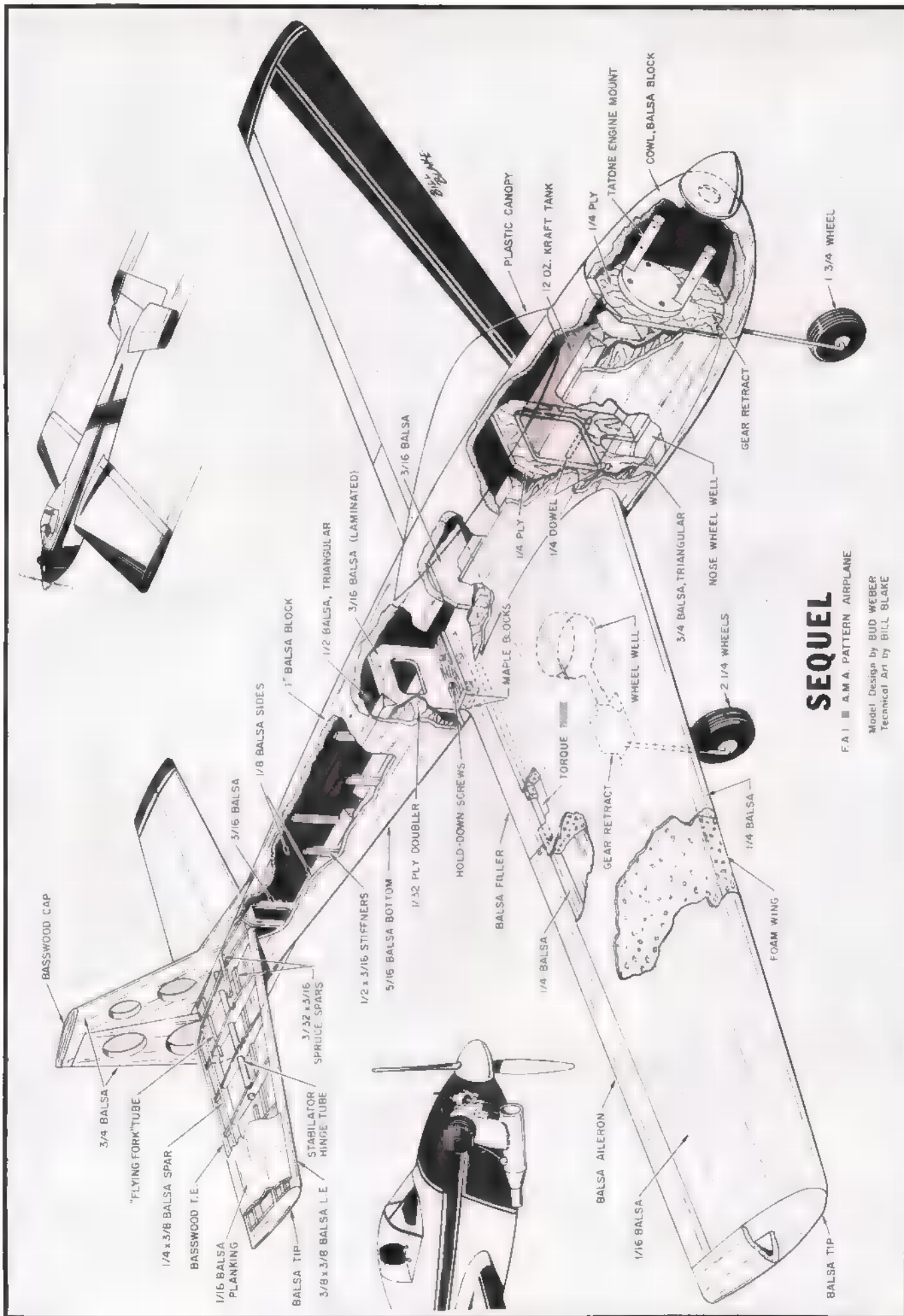
Grab some brown wrapping paper, a good scissors, low-tack masking tape (I like draftsman tape) and various widths of masking tape. Mark off your key points to assure symmetry (follow a general plan that you can lightly sketch out in advance on a miniature three-view). Cover the base coat areas to protect from overspray. When you are sure that the edges of the mask are pressed firmly down, use a small brush and lightly dope (clear) the edges of the mask.

When dry, you are ready to spray the color trim. I use the Binks Air Brush for this, and apply just enough color to cover. By the time you finish one end of the plane, you can remove the masks from the other end, provided that you used Butyrate Dope. When the color is set up firmly, use D-J Striping for the final accent color. Now, mist-coat the entire plane with clear Ambroid, then flow on another coat. This is it—a two-night finish, perhaps three if you use a clear canopy.

If you wish, you can rub this out after a couple of days. I usually do not...time is money to me, and a contest bird finished like this is plenty good to impress the judges, yet endure a full season of practice and competition, including frequent cleanings and waxing with Pledge.

I think it was old Ben Franklin who said, "There is nothing new under the sun." That is appropriate for our pattern birds, as pointed out many times by the magazine editors; however, it takes courage to depart from the ordinary, to pick out features you like, and eliminate things you dislike and come up with a scratch design...sort of an amalgamation of ideas gathered up from many RC fliers and designers, not only the great ones like Page, Whitley, Brown, Lowe, Mueller, Miller and Kirkland, Chidgey, etc., but from the real bread and butter contest buff who keeps changing and trying.

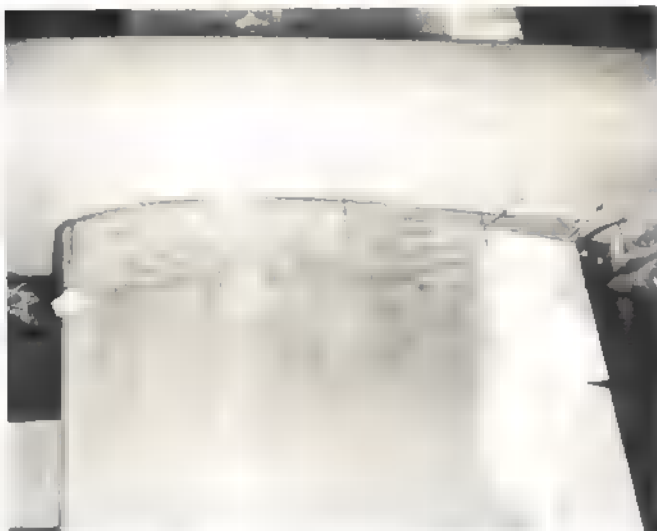
If credits are due, I can't overlook Roger Olson, our club's chief test pilot! If it's been made, he's tried it. He dragged me to my first contest in '69...and the bug bit deeply. Guys like



SEQUEL

F.A.I. ■ A.M.A. PATTERN AIRPLANE

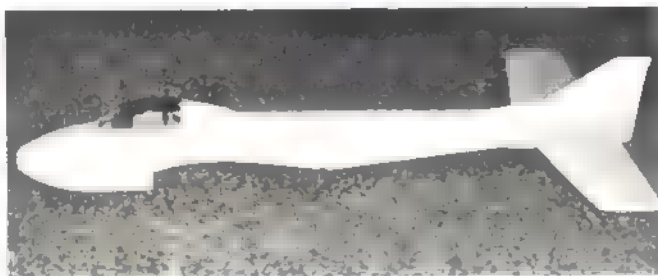
Model Design by BUD WEBER
Technical Art by BILL BLAKE



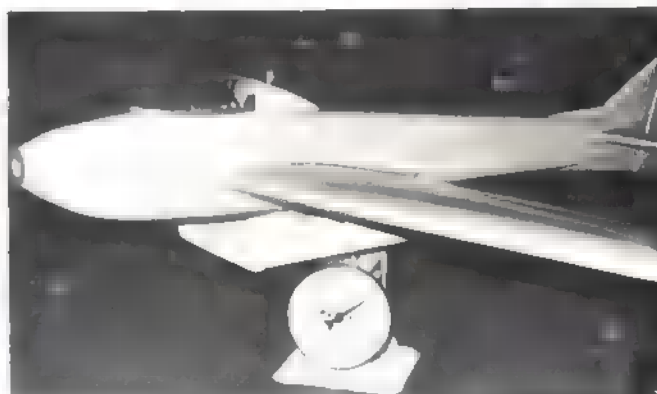
The fillets go quickly if you've made them before, but the first time will take some getting used to. Make them smooth and flowing.



Fillet and mask the canopy. People's eyes tend to focus on this central object on airframes, so work carefully.



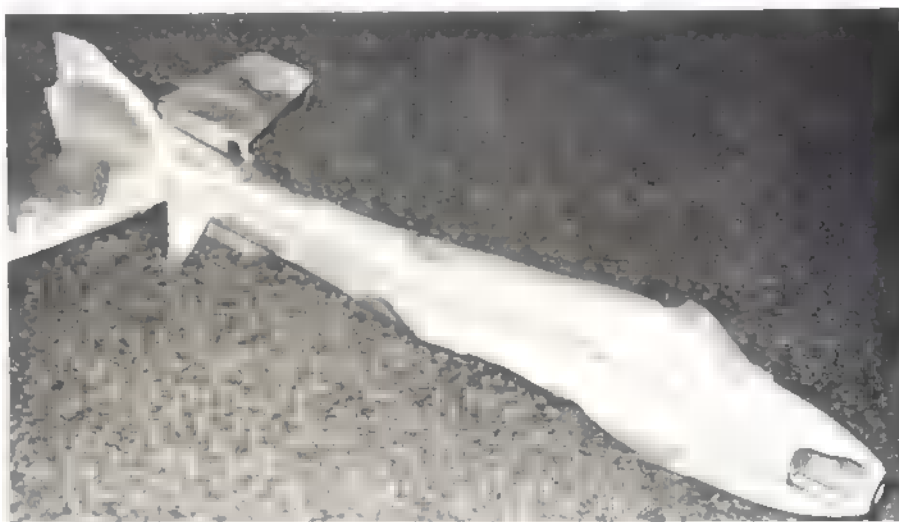
ABOVE: Looking like a piece of metal or glass, a well-built fuselage is pleasant thing to see (or have). RIGHT: The scale reads 4 1/2 lb., primed and ready for finishing. Add 16 oz. for engine/muffler, 10 oz. for radio, 6 oz. of finish (!), another pound for retracts, and you should be at the expected 7 1/2 lbs. BELOW RIGHT: Use brown paper for masking. A good quality paint scheme is worth appearance points on the most objective judge's flight line.



Elmer, Phil, Dean and Bart. There's Phil Seeburger...fearless Phil, the greatest competitor of them all. He *never* quits...he even runs his SuperTigre in Holiday Inn parking lots at 2 a.m. to iron out the bugs—he also loves to see all the lights go on.

There's Lee Richter with his own design Owl; Frank DeFranco with his unselfish advice on building techniques; Frank Morrissey with his super enthusiasm for the hobby (and smelly, gunky cigars in my van going to contests), laced with good, solid competitive spirit; Doc Boren with technical advice and encouraging words; Gary Brautigam (Sky Chief); plus all the good guys around the contest circuit. Pick all their brains and you've got to come up with a winner!

This is our year. The Sequel is ready. The rest is up to the pilot! You guys out there really designed this ship, so put up another shelf for the trophies.



R/C MULTI CHANNEL



THE CONTENDER—The first all-balsa R/C model you can build in just 1 hrs. Wing Span: 54" Eng.: 45 to .60. Kit RC-15

\$44.95

KWIK-FLI III... World and twice Nats. winner. Designed by Phil Kraft. Span: 60" Eng.: 45 to 61 Kit RC-12 includes for true straight wing.

\$57.50

R/C NOBLER Radio version of the winningest stunt model of all time. Wing Span 51" Eng.: 45 to .60. Kit RC-14

\$36.50

R/C SCALE AND SCALE



S.E.S. Never before has a R/C scale model been designed with such attention to the most insignificant detail. Wing Span: 52" Eng.: 45 to .60 Kit RC-13

\$57.50

MUSTANG P-51... A standoff scale model that only a ruler can tell from a true scale plane. Wing Span: 60" Eng.: .40 to .60. Kit RC-16

\$54.95

WARHAWK P-40... Now, in answer to your many requests. Span: 60" Eng.: .40 to .60. Kit RC-17

\$57.50

R/C COMPACTS



HEADMASTER... America's best R/C trainer, for up to 3 channels. Span: 31" Eng.: .09-.35 Kit RC-11

\$23.95

TOP DAWG... Single or multi-channel for sport or pylon racing. Span: 39.5" Eng.: .049-.15 Kit RC-10

\$19.95

SCHOOLMASTER... Single or multi channel with rudder, elevator and engine control. Span: 39" Eng.: .049-.090 Kit RC-8

\$13.50

SCHOOLGIRL... Span 32" Eng.: .020-.049 Kit RC-9

\$12.50

SCHOOLBOY... Span: 29" Eng.: .010-.020 Kit RC-3

\$8.50

SEMI-SCALE STUNTERS



HAWKER HURRICANE... Span: 42" Eng.: .19-.35 Kit S-51

\$12.95

CURTISS P-40... Span: 42" Eng.: .19-.35 Kit S-50

\$12.95



for those
who insist on the
**VERY
BEST!**

CONTROL LINE SCALE MODELS

SUPER FORM PREFORMED FUSELAGE SHELLS FOR FAST STURDY CONSTRUCTION



P-40 WARHAWK... Span: 28" Eng.: .15-.29 Kit S-1

\$16.95

P-47 THUNDERBOLT... Span: 27" Eng.: .15-.29 Kit S-2

\$16.95

P-51D... Span: 37" Eng.: .29-.35 Kit S-3

\$23.50

1/2 FORM-FLITES (SCALE U/C)



HELLCAT... Span: 18" Kit S-20

HELLCAT... Span: 18" Kit S-21

THUNDERBOLT... Span: 18" Kit S-22

\$4.50

CONTROL LINE - STUNT PLANES



REPEATED NATIONALS WORLD CHAMP.

NOBLER... Winningest plane of all time. Span: 50" Eng.: .19-.35 Kit N-1

\$22.95



NATIONAL AYSO PLACE WINNER

JUNIOR NOBLER... For expert or novice. Span: 40" Eng.: .15-.25 Kit N-2

\$12.95



PEACEMAKER... Superform for fast construction, exceptionally durable. Span: 40" Eng.: .15-.29 Kit N-7

\$14.95

FAMOUS FLITE FAMILY

CONTROL LINE COMBAT MODELS



NATIONALS COMBAT

FLITE STREAK... Combat or stunt flying at terrific speeds. Span: 42" Eng.: .15-.35 Kit N-2

\$11.95

JR. FLITE STREAK... Span: 31" Eng.: .15-.25 Kit N-3

\$8.95

FLITE STREAK... Span: 24 1/2" Eng.: .049-.099 Kit N-4

\$4.95

COMBAT STREAK... Span: 42" Eng.: .19-.35 Kit N-5

\$10.95

STREAK TRAINER... Span 33" Eng.: .15-.19 Kit N-10

\$12.95



COMBAT CATS... Two complete models in one box. Span: 39 1/2" Eng.: .19-.35 Kit N-8

\$12.50
(2 models)



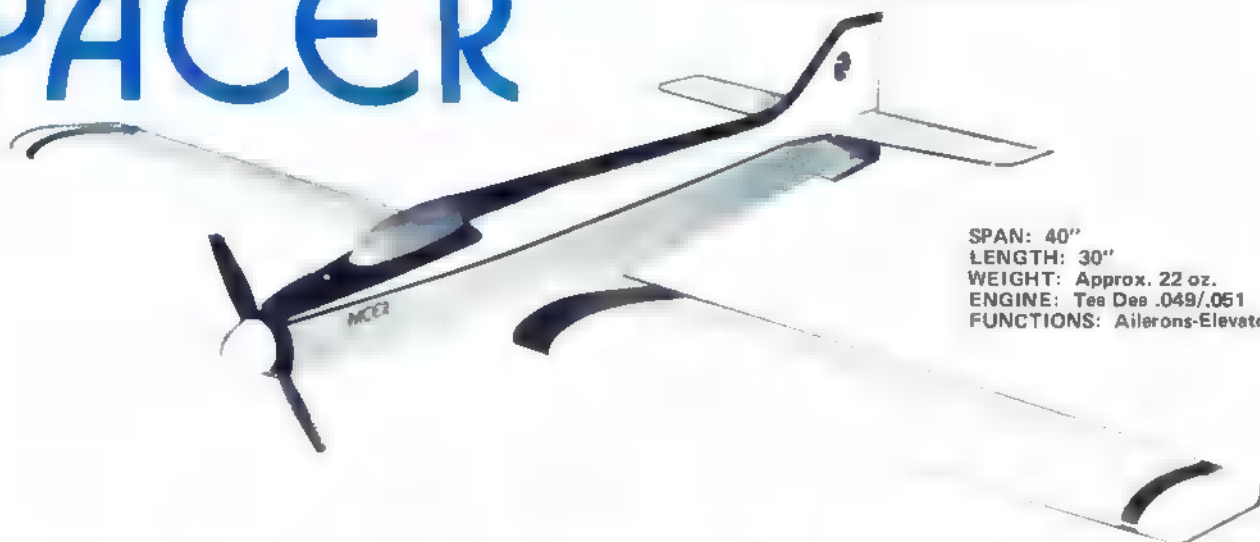
COMBAT KITTENS... Span: 22 1/4" Eng.: .049 Kit N-9

\$8.50
(2 models)

TOP FLITE MODELS, INC. 2635 S. WABASH CHICAGO, ILL. 60616

PACER

Designed by Owen Kampen



SPAN: 40"
LENGTH: 30"
WEIGHT: Approx. 22 oz.
ENGINE: Tee Dee .049/.051
FUNCTIONS: Ailerons-Elevator

The PACER is a high performance 1/2A powered plane designed to have the fast speed, solid tracking, smooth maneuvering, and axial roll characteristics of modern pattern ships in a small, compact, economical package based on a Cox Tee Dee .049 and a two-channel radio with small servos and battery pack.

This airplane offers more excitement and ability-to-perform than ever seen before in its size class. All of the advantages of small airplanes are maintained; yet it still has the outstanding performance to challenge the best of fliers.

(Ace has a 1 3/8" spinner available for this plane: 37L78-\$1.25)

13L107 Pacer Kit \$19.95

THE "GAS SAVERS!"

YOU DON'T HAVE TO SACRIFICE PERFORMANCE FOR ECONOMY.



Designed by Owen Kampen

NEW!!

UPSTART II

Although initially conceived and developed a few years ago, the concept of 1/2A racing is mushrooming because of the increasing fuel costs and the ever increasing need for expert skills in the quarter midjet class. This new improved version of the popular Upstart is a step further toward perfection in 1/2A racing.

Through the data learned in the development of the Whizard and the Pacer, the Upstart II is set up for aileron and elevator control for tighter, groovier pylon turns and more consistent straight out flight. Recommended engine is the Cox .049/.051.

As with any high performance airplane, it is not recommended for beginners.

13L102 Upstart II Kit \$17.95

SPAN: 32 in.
AREA: 200 sq. in.
LENGTH: 28 1/2 in.
POWER: Tee Dee .049
FUNCTIONS: Ailerons - Elevator

ACE R/C INC.

DIGITAL COMMANDER KITS

THE CONCEPT OF the Digital Commander series of kits designed by Fred Marks is to offer expansion or replacement within your existing system--no matter what brand or how many channels. You no longer have to pay unreasonably high prices for an additional receiver, servo, or flite pack.



THIS SYSTEM WILL WORK WITH YOUR TRANSMITTER!

1-8 RECEIVER

This receiver features voltage regulated circuitry with AGC and double tuned front end. An 8 bit shift register in the IC decoder offers up to eight channel operation of positive or negative pulse servos with three or four wires.

Case measures 1 1/8 X 1 1/2 X 1 7/8 in. Weight is 1.4 oz. Connectors ☐ not furnished. Available on ☐ 27, 53, and 72 MHz frequencies.

1-8 FLITE PAK

The Flite Pak kits come with a 1-8 receiver, the number and style of servos specified, plus the switch and Dean's connectors necessary to make a complete flite pack less batteries. Available on all 27, 53 and 72 MHz frequencies. Please specify.

SERVO

An IC servo amplifier and the popular D & R servo mechanics combine to make a servo that gives superior resolution and rapid transit time. Will operate with 3 or 4 wire IC decoders with positive pulse output.

Available in Bantam (rotary output-1 1/2 X 1 7/16 X 3/4 in.); Linear (linear or rotary output-1 13/16 X 1 7/16 X 7/8 in.); or Retract (Goldberg mechanics-180° travel). Available assembled for an additional \$8.00.

A conversion kit is available ☐ increase the Bantam's power by .8 lb. which subsequently increases transit time by about .1 second.

PRICES

FLITE PAK KITS

12G18-2 Flite Pak w/2 Bantams	\$79.95
12G18-4 Flite Pak w/4 Bantams	124.95
12G18-2L Flite Pak w/2 Linears	81.95
12G18-4L Flite Pak w/4 Linears	126.95

1-8 RECEIVER

12G18 1-8 Receiver Kit	\$37.95
Add \$5.00 for receivers and flite paks on 72 MHz	

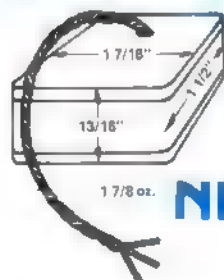
SERVO

14G20 Bantam Servo Kit	\$23.95
14K89 High Power Bantam Conv. Kit	1.00
14G20L Linear Servo Kit	24.95
14G24 Retract Servo Kit	24.95
14G25 Servo Electronics Only	10.75
Add \$8.00 for assembled servos.	

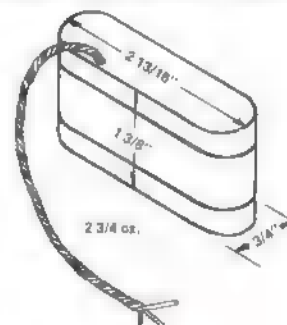
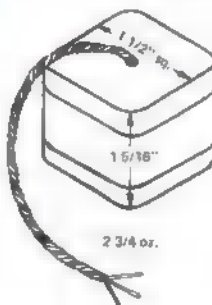
**AVAILABLE ON ALL
27, 53, and 72 MHz FREQUENCIES**

4.8V Battery Packs

PERFECT FOR SMALL PLANE APPLICATIONS



NEW!



38K51-4.8V 225 MAH BATTERY PACK \$13.50

38K56S-4.8V 450 MAH SQUARE PACK \$13.50

38K56F-4.8V 450 MAH FLAT PACK \$13.50

ACE R/C, 511, 116 W. 19th, HIGGINSVILLE, MO., 64037

ADDRESS _____

CITY _____ STATE _____ ZIP _____

BankAmericard/Mastercharge Number _____

QUAN	CAT. NO.	ITEM	PRICE	TOTAL

ADD \$1.00 for handling on all orders except catalog.

WRITE FOR OUR COMPLETE CATALOG CONTAINING OUR FULL LINE OF AIRPLANES AND R/C GEAR. PLUS MANY OTHER MANUFACTURER'S ITEMS - \$1.00 (\$1.50 FOR FIRST CLASS MAIL RETURN)

ACE R/C INC.

aam

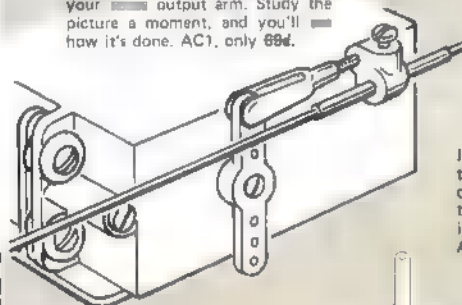


CARL GOLDBERG

3 NEW AILERON FITTINGS!

AILERON COUPLER

At last, a simple way to couple conventional aileron pushrods to your output arm. Study the picture a moment, and you'll know it's done. AC1, only 88¢.



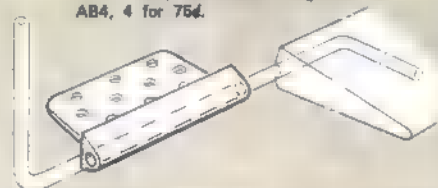
KLETT AILERON PUSHROD EXITS

A beautiful fairing where the aileron pushrod exits your wing. Roy Klett again has used his special quality touch to produce the finest item of its kind. PEG 3, 2 for 69¢.

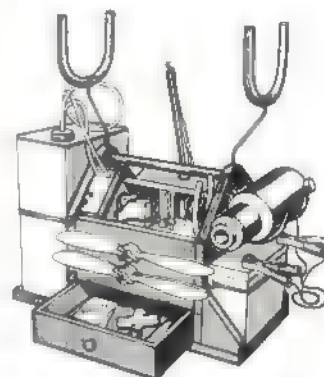


KLETT AILERON HORN BEARING

If you like precision fits, ask to see the Klett horn bearing. Superior to others, it reduces play, and has a thin tapered tab to facilitate entry into a slot, and holes for glue. AB4, 4 for 75¢.



NEW! THE RIGHT-AND-LIGHT FLITE BOX HANDI-TOTE!

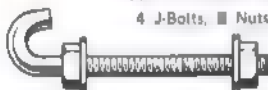


Here's the Flite Box that won't give you a hernia! Compact like you won't believe, yet room for everything you need. HANDI-TOTE designed by Bob Rich, a practical modeler who files a lot—he travels around (he's our field representative). Kwik-Assembly kit HT1, only \$14.95.

NEW!

1 1/4" LONG J-BOLTS

4 J-Bolts, 1 Nuts, 8 Washers
J-B6 59¢



Long J-Bolts are especially useful for holding tanks in place as illustrated here.



1/2" J-BOLTS.
J-B6 4 for 1

NEW!

4" AND 6" WIDE NYLON REINFORCING TAPE

Extremely tough with epoxy.
6" wide x 5 ft \$1.00
4" wide x 5 ft M4
2 1/2" wide x 5 ft N2
3/4" wide x 5 ft

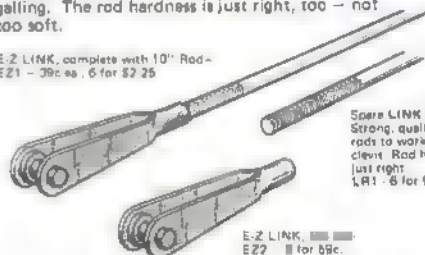


NEW! CG LOW BOUNCE WHEELS With SHARP, CLEAN RIB TREADS and TOUGH, LONG-WEARING HUBS. From 1-13/16" Dia. on up, wheels take standard brakes. 7 sizes—1-3/8" to 3-1/8". From \$1.89 to \$3.19 pr. Tested and proved in the field by famous fliers, these wheels will be pleased by very attractive new CG Low Bounce Wheels. Ask your dealer to show you the one you want.



Spring Steel E-Z LINKS with 10" Rod 39¢ Each, or 6 for \$2.25. New E-Z LINKS not only save you money, but are made of spring steel and have quality threads that work smoothly without galling. The rod hardness is just right, too—not too soft.

E-Z LINK, complete with 10" Rod—E21—39¢ ea., 6 for \$2.25

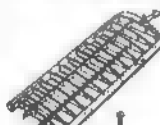


SPARE LINK RODS
Strong, quality threaded rods to work in 2-56 clevis Rod hardness just right.
L-R1-6 for 59¢.

E-Z LINK, E22 11 for 59¢.



REPLACEMENT FOAM
Ranger 1/2" foam wing you in the air quickly—\$5.50. Vertical fin, set—\$2.95. Assembled Ranger 42 fuselage, plus 1/2" foam, plus 1/2" foam—\$11.95



WING KITS For Falcon 58 and Skylark 58. Can be used on 1/2" shio. \$10.95 for Sr. Falcon. Easily built, strong \$20.95 Skylark 52, \$20.95



AILERON BELLCRANK
Has steel bushing so crank can be screwed firmly in place without binding. 50¢ for 2 AB



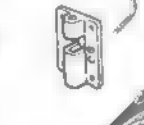
UNIQUE SNAP LINK!
Patented. Tiny 45° shoulder snaps through arm, prevents accidental opening. Snap-Link with rod Mini-Snaplink with 29¢. Either one, less rod—2 for 40¢.



NYLON STEERING ARM
Hardened steel collar screw. 75¢ EA1



STEERABLE NOSE
Complete Steerable nose gear with nylon bearing, 5/32" plated must wire strut, extra collar, blind nuts, screws and washers. \$2.50 G16N



NYLON BEARING
Design, no alignment problems. Includes blind nuts, screws and washers. 75¢



NEW—MAJOR R/C FITTING SETS R/C Fittings Set No. 1 for ship with standard screws. \$3.50 R/C Fittings Set No. 2 for ship with stop ailerons. \$3.50 RFS2



SHEET METAL SCREWS
Like wood screws, but better. Sharp threads, hard. 1/2" x 1/4" 25¢ 1/2" x 3/8" 30¢ 1/2" x 1/2" 35¢ 1/2" x 5/8" 40¢ 1/2" x 3/4" 45¢ 1/2" x 7/8" 50¢ 1/2" x 1" 55¢ 1/2" x 1 1/8" 60¢ 1/2" x 1 1/4" 65¢ 1/2" x 1 1/2" 70¢ 1/2" x 1 3/4" 75¢ 1/2" x 2" 80¢ 1/2" x 2 1/4" 85¢ 1/2" x 2 1/2" 90¢ 1/2" x 2 3/4" 95¢ 1/2" x 3" 100¢ 1/2" x 3 1/4" 105¢ 1/2" x 3 1/2" 110¢ 1/2" x 3 3/4" 115¢ 1/2" x 4" 120¢ 1/2" x 4 1/4" 125¢ 1/2" x 4 1/2" 130¢ 1/2" x 4 3/4" 135¢ 1/2" x 5" 140¢ 1/2" x 5 1/4" 145¢ 1/2" x 5 1/2" 150¢ 1/2" x 5 3/4" 155¢ 1/2" x 6" 160¢ 1/2" x 6 1/4" 165¢ 1/2" x 6 1/2" 170¢ 1/2" x 6 3/4" 175¢ 1/2" x 7" 180¢ 1/2" x 7 1/4" 185¢ 1/2" x 7 1/2" 190¢ 1/2" x 7 3/4" 195¢ 1/2" x 8" 200¢ 1/2" x 8 1/4" 205¢ 1/2" x 8 1/2" 210¢ 1/2" x 8 3/4" 215¢ 1/2" x 9" 220¢ 1/2" x 9 1/4" 225¢ 1/2" x 9 1/2" 230¢ 1/2" x 9 3/4" 235¢ 1/2" x 10" 240¢ 1/2" x 10 1/4" 245¢ 1/2" x 10 1/2" 250¢ 1/2" x 10 3/4" 255¢ 1/2" x 11" 260¢ 1/2" x 11 1/4" 265¢ 1/2" x 11 1/2" 270¢ 1/2" x 11 3/4" 275¢ 1/2" x 12" 280¢ 1/2" x 12 1/4" 285¢ 1/2" x 12 1/2" 290¢ 1/2" x 12 3/4" 295¢ 1/2" x 13" 300¢ 1/2" x 13 1/4" 305¢ 1/2" x 13 1/2" 310¢ 1/2" x 13 3/4" 315¢ 1/2" x 14" 320¢ 1/2" x 14 1/4" 325¢ 1/2" x 14 1/2" 330¢ 1/2" x 14 3/4" 335¢ 1/2" x 15" 340¢ 1/2" x 15 1/4" 345¢ 1/2" x 15 1/2" 350¢ 1/2" x 15 3/4" 355¢ 1/2" x 16" 360¢ 1/2" x 16 1/4" 365¢ 1/2" x 16 1/2" 370¢ 1/2" x 16 3/4" 375¢ 1/2" x 17" 380¢ 1/2" x 17 1/4" 385¢ 1/2" x 17 1/2" 390¢ 1/2" x 17 3/4" 395¢ 1/2" x 18" 400¢ 1/2" x 18 1/4" 405¢ 1/2" x 18 1/2" 410¢ 1/2" x 18 3/4" 415¢ 1/2" x 19" 420¢ 1/2" x 19 1/4" 425¢ 1/2" x 19 1/2" 430¢ 1/2" x 19 3/4" 435¢ 1/2" x 20" 440¢ 1/2" x 20 1/4" 445¢ 1/2" x 20 1/2" 450¢ 1/2" x 20 3/4" 455¢ 1/2" x 21" 460¢ 1/2" x 21 1/4" 465¢ 1/2" x 21 1/2" 470¢ 1/2" x 21 3/4" 475¢ 1/2" x 22" 480¢ 1/2" x 22 1/4" 485¢ 1/2" x 22 1/2" 490¢ 1/2" x 22 3/4" 495¢ 1/2" x 23" 500¢ 1/2" x 23 1/4" 505¢ 1/2" x 23 1/2" 510¢ 1/2" x 23 3/4" 515¢ 1/2" x 24" 520¢ 1/2" x 24 1/4" 525¢ 1/2" x 24 1/2" 530¢ 1/2" x 24 3/4" 535¢ 1/2" x 25" 540¢ 1/2" x 25 1/4" 545¢ 1/2" x 25 1/2" 550¢ 1/2" x 25 3/4" 555¢ 1/2" x 26" 560¢ 1/2" x 26 1/4" 565¢ 1/2" x 26 1/2" 570¢ 1/2" x 26 3/4" 575¢ 1/2" x 27" 580¢ 1/2" x 27 1/4" 585¢ 1/2" x 27 1/2" 590¢ 1/2" x 27 3/4" 595¢ 1/2" x 28" 600¢ 1/2" x 28 1/4" 605¢ 1/2" x 28 1/2" 610¢ 1/2" x 28 3/4" 615¢ 1/2" x 29" 620¢ 1/2" x 29 1/4" 625¢ 1/2" x 29 1/2" 630¢ 1/2" x 29 3/4" 635¢ 1/2" x 30" 640¢ 1/2" x 30 1/4" 645¢ 1/2" x 30 1/2" 650¢ 1/2" x 30 3/4" 655¢ 1/2" x 31" 660¢ 1/2" x 31 1/4" 665¢ 1/2" x 31 1/2" 670¢ 1/2" x 31 3/4" 675¢ 1/2" x 32" 680¢ 1/2" x 32 1/4" 685¢ 1/2" x 32 1/2" 690¢ 1/2" x 32 3/4" 695¢ 1/2" x 33" 700¢ 1/2" x 33 1/4" 705¢ 1/2" x 33 1/2" 710¢ 1/2" x 33 3/4" 715¢ 1/2" x 34" 720¢ 1/2" x 34 1/4" 725¢ 1/2" x 34 1/2" 730¢ 1/2" x 34 3/4" 735¢ 1/2" x 35" 740¢ 1/2" x 35 1/4" 745¢ 1/2" x 35 1/2" 750¢ 1/2" x 35 3/4" 755¢ 1/2" x 36" 760¢ 1/2" x 36 1/4" 765¢ 1/2" x 36 1/2" 770¢ 1/2" x 36 3/4" 775¢ 1/2" x 37" 780¢ 1/2" x 37 1/4" 785¢ 1/2" x 37 1/2" 790¢ 1/2" x 37 3/4" 795¢ 1/2" x 38" 800¢ 1/2" x 38 1/4" 805¢ 1/2" x 38 1/2" 810¢ 1/2" x 38 3/4" 815¢ 1/2" x 39" 820¢ 1/2" x 39 1/4" 825¢ 1/2" x 39 1/2" 830¢ 1/2" x 39 3/4" 835¢ 1/2" x 40" 840¢ 1/2" x 40 1/4" 845¢ 1/2" x 40 1/2" 850¢ 1/2" x 40 3/4" 855¢ 1/2" x 41" 860¢ 1/2" x 41 1/4" 865¢ 1/2" x 41 1/2" 870¢ 1/2" x 41 3/4" 875¢ 1/2" x 42" 880¢ 1/2" x 42 1/4" 885¢ 1/2" x 42 1/2" 890¢ 1/2" x 42 3/4" 895¢ 1/2" x 43" 900¢ 1/2" x 43 1/4" 905¢ 1/2" x 43 1/2" 910¢ 1/2" x 43 3/4" 915¢ 1/2" x 44" 920¢ 1/2" x 44 1/4" 925¢ 1/2" x 44 1/2" 930¢ 1/2" x 44 3/4" 935¢ 1/2" x 45" 940¢ 1/2" x 45 1/4" 945¢ 1/2" x 45 1/2" 950¢ 1/2" x 45 3/4" 955¢ 1/2" x 46" 960¢ 1/2" x 46 1/4" 965¢ 1/2" x 46 1/2" 970¢ 1/2" x 46 3/4" 975¢ 1/2" x 47" 980¢ 1/2" x 47 1/4" 985¢ 1/2" x 47 1/2" 990¢ 1/2" x 47 3/4" 995¢ 1/2" x 48" 1000¢

5/32" AXLE
Adjustable axle allows you to easily have the strut length you want. Both the axle and screw are hardened steel. Just file a flat on the strut, and tighten axle in place. 75¢ ea. AA1



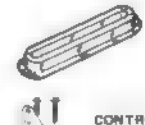
END BRACKET for COX EB1



KLETT HINGES—WORLD'S FINEST!
Small RK2 hinges are as thin as a knife slit. Regular RK3 hinges are the slickest you've ever seen. Removable pins.
RK2-7 7 for \$1.10
RK2-7 11 for \$1.25
RK2-15 11 for \$1.95
RK3-15 11 for \$2.35



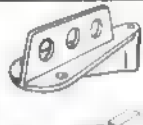
KLETT SAFETY DRIVER
Can't slip off and damage your wing! Large for 1/4" Nylon Screws. Small for No. 10 Nylon Screws. 90¢ ea.
Large 501 Small 502



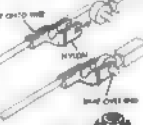
KLETT PUSHROD EXIT
To fuse-lage and insure smooth operation of pushrods. Tough nylon. Two sizes—large for 5/64" wire, small for 1/16" wire.
Large 4 per pkg. 75¢ PEG-2 Small 4 per pkg. 75¢



CONTROL HORNS
Right hand—left from control. Long horns or short, with screws. 50¢ for 2. Long CH1 Short



NYLON TAILWHEEL BRACKET Cut a slot in fuselage bottom, smear epoxy on tin, and slide into place. TBI-400



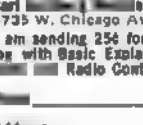
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SCS Decoder Conversion

Update that SCS receiver to a top-notch, eight-channel IC job. / by Darryl G. Bingold

SCS (silicon controlled switch) decoders have always been a bit fussy. They are subject to noise and unexplained failures, and are also difficult to troubleshoot. About two years ago, we found out (after expending \$28.00) that GE had changed the specification on the then-popular 3N84 SCS. Because of this, it no longer worked in the Royal Classic decoder. This article presents a quick way to dispense with them in one receiver.

Most SCS decoders eventually present the following problems:

1. A usually reliable system begins to exhibit glitches.
2. Servos begin to become jittery, and the smaller IC type servos cannot be used due to the jitters.

In searching for my own answers to some servo jitters and plane crashes, I traced electrical noise spikes being generated by the servo armatures and back into the SCS decoder. It then triggers a false SCS out-

put which, in turn, "kicks" one or all servos plugged in: they respond with more "kicks" and more noise transients. Thus, in a few milliseconds, your decoder is flooded with false outputs, and the only way out of this is to stop the transmitter signal or stop the receiver signal. The accomplished plane hits

The SCS decoder latter is when the the ground. reason your worked for

some time and then started getting shaky, is that as the servo motors got older, they started arcing more and more. (Yes I know they are supposed to have suppressors.) (You are supposed to change motors when they get noisy—F.M.) Possibly some environmental factor slightly changes the normally touchy characteristics of the Silicon Controlled Switches. Normal pilot error also subjected the airborne system to knocks and jolts on the battery leads and system plugs—all leading to electrical noise getting into the SCS decoder and jamming its proper function. Our investigation led to the fact that the transistor-transistor logic family

has close to one volt of noise immunity. In addition, it is all direct-coupled internally, not capacitive-coupled as is the SCS decoder; therefore, electrical noise spikes that drive the SCS decoder wild are completely ignored by the one-volt threshold against noise in the TTL.

With some care and effort (and about \$10.00) you can rejuvenate the Cannon receiver—reduce current drain by 10 mills, cut down on component count (from 32 to 10) and create a total of eight channels of decoding as a bonus.

The conversion was made on a Cannon model C525 or D525 receiver but could also be applied to any of the older receivers such as the Heath GD247 series by hooking into the collector of Q102 where positive going pulses are available. (The decoder has been used by individuals on certain other receivers which produce an amplified, clipped positive-going output pulse—F.M.) The following steps will be necessary:



The Cannon receiver before modification.



All the lands have been cleared and the two ICs have been dropped in.



When rewiring, note red, black positions.

1. Remove components no longer necessary (per reference drawing). Save wires attached to servo plugs.

2. Peel off land patterns formerly needed for SCS decoder circuits.

3. Drill holes for (two) 14 pin ICs.

4. Install new components and hard wire circuit back together.

Photo 1 shows the Cannon Receiver with five SCSs toward the bottom.

A. Remove all components identified with dark shading on the mechanical layout with a solder sucker or by heating and "wicking" the solder out.

B. Clear a path of land patterns from the board using an X-acto knife. This will only take 10 minutes. (See photo 2.)

C. Drill holes for the (two) 14 pin ICs per template furnished, using a #64 drill bit.

D. Install the two ICs, bending their terminals down flat on the board and pointing toward each other.

E. Install all other components in any holes available, paying attention to any lands left over which might be used for connections.

F. Using small 32 gauge wire (such as Belden 8430 or phono cartridge hook-up wire available in most electronics discount stores) solder point to point per mechanical layout until all pins needed are hooked up.

G. Re-install wires from servo plugs. Former channel wires blue, green, pur-

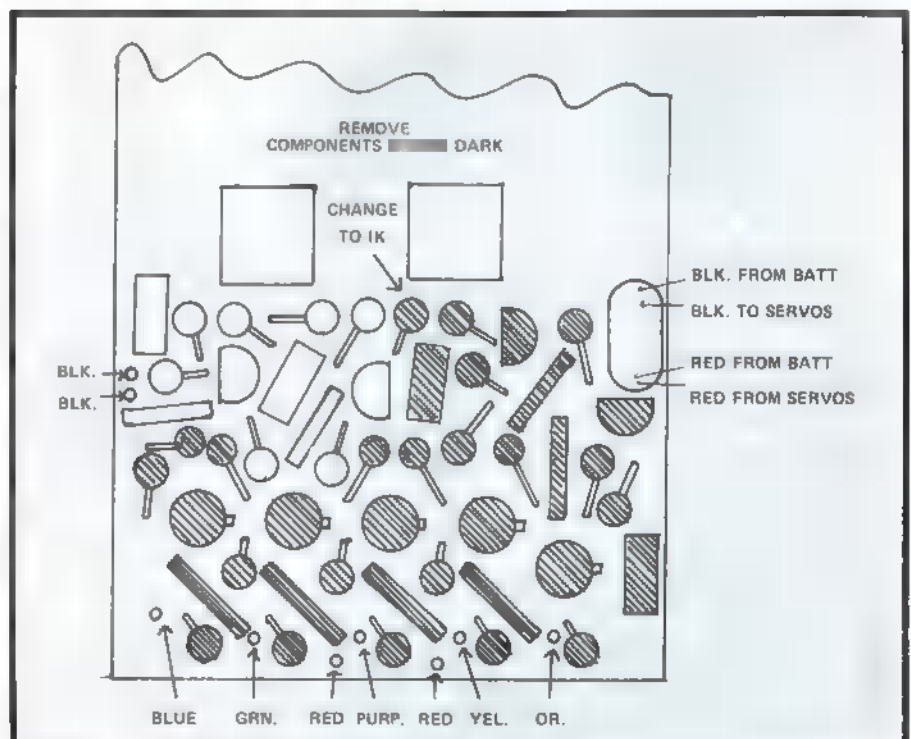
ple, yellow, orange will go to pins 10, 6, 5, 4, 3. Two red wires will go to the plus side of capacitor C-21. Two black wires will go to the minus side of capacitor C-21 (See photo 3).

The minus reset line (shown dotted in) need only be wired up if turning the receiver on without the transmitter creates any servo jamming toward one end of its travel. This could happen if a noise spike from the receiver is able to rattle down through the 7404. Most

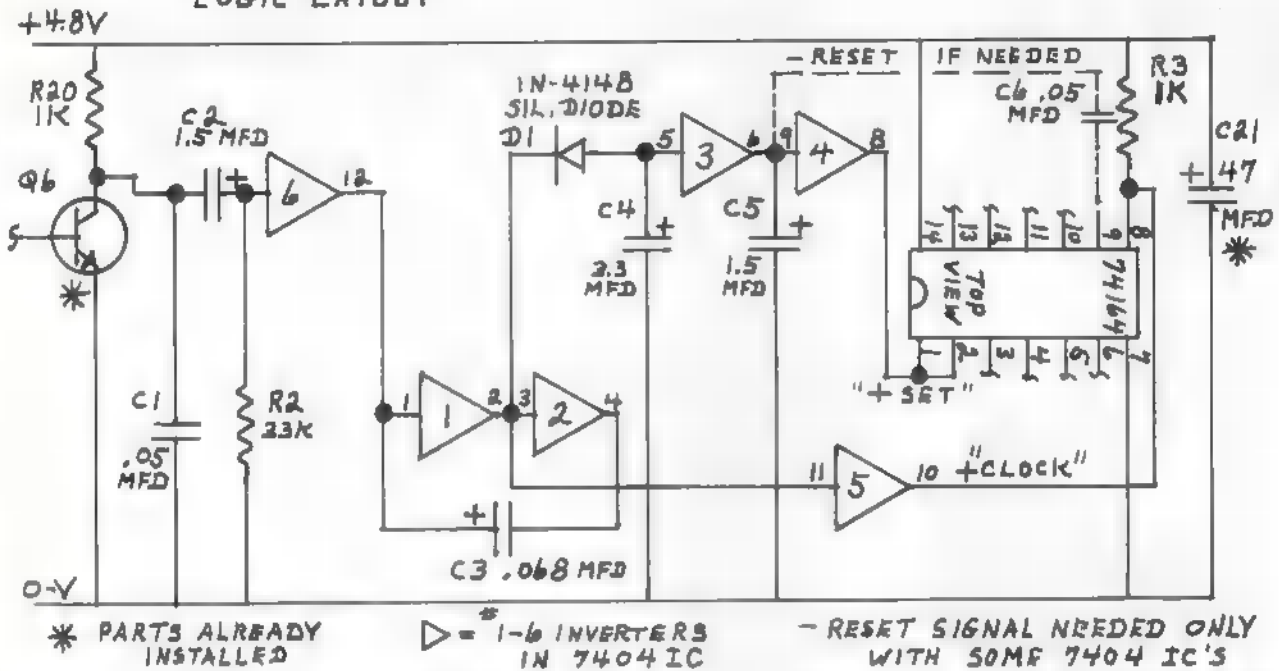
7404 ICs will not exhibit this tendency, but if yours does, this reset line will solve the problem.

This conversion will update your SCS decoder to the generally accepted latest, most reliable system available in equipment today.

The author would like to thank the Cannon Electronics Corp. for the use of some schematics and Fred Marks of AAM for his well designed IC decoder scheme.

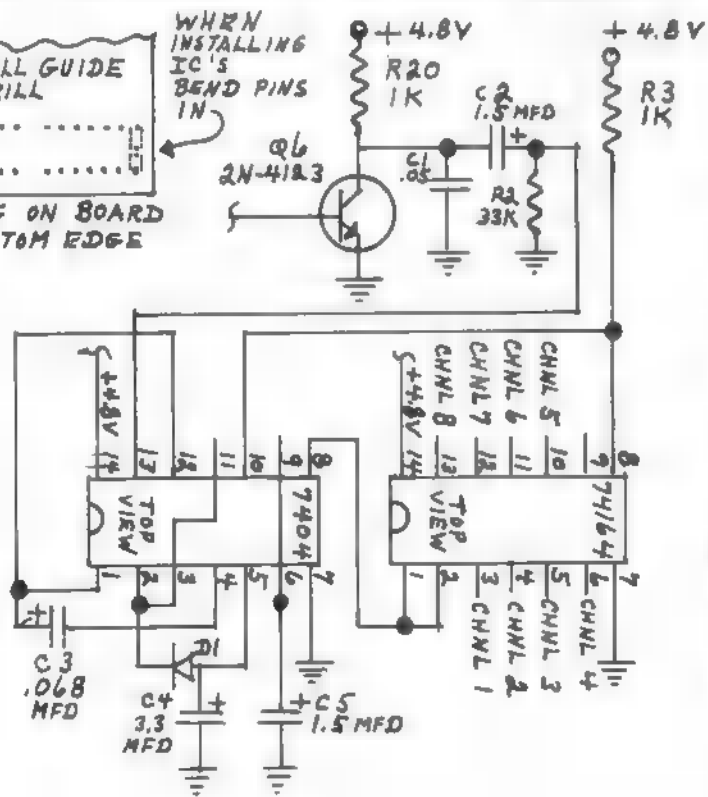


LOGIC LAYOUT

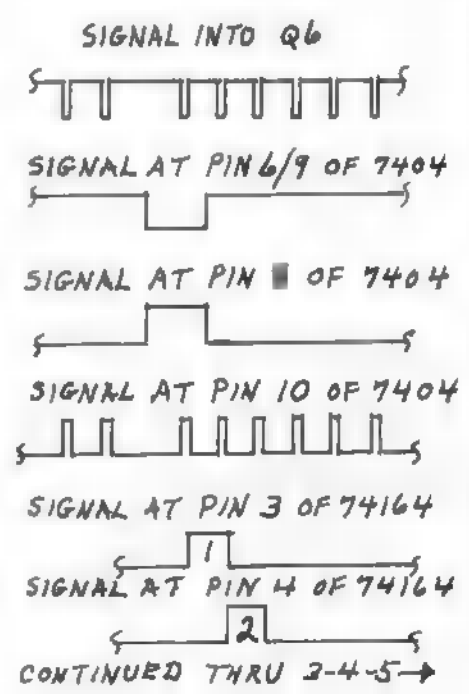


IC DRILL GUIDE
#64 DRILL
LOCATE ON BOARD
BOTTOM EDGE

WHEN INSTALLING IC'S BEND PINS IN

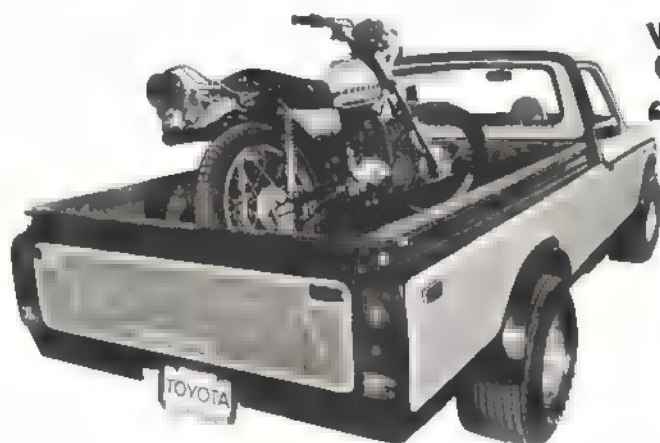


MECHANICAL LAYOUT



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Terry and his Toni just won the prestigious NMPRA Championships in Miami.

X-40 there are a few things you can do yourself which should add several hundred rpm.

(1) File the exhaust port on the cylinder liner to raise the opening about .020 (that's a little more than 1/64").

(2) Widen and heighten the exhaust on the case to match the cylinder liner. You'll note a slight mismatch in the engine as it is manufactured.

(3) Widen and heighten the exhaust adapter to match the case you just opened up.

(4) Add an exhaust tube which fits the adapter and is 3 1/2" long, from the rear part of the adapter to the end of the tube.

(5) Remove the stock needle valve and plug one end of the venturi with an 8-32 screw (you must tap the venturi first) and use either an OS 35 needle assembly or K&B 40 needle assembly in the other side. You must tap this side for an 8-40 thread to use a K&B needle. The OS fits fine.

Please don't make these modifications and then decide to send your engine in to someone else (or me) for modification. Normally, jigs are made to

How To Go FAST(ER)

The man who has flown the fastest Formula 1 Pylon course in the world tells some of his "secrets." / by Terry Prather

The answer to the question: What makes a winner in pylon racing?, can be boiled down to three basic items—airplane, powerplant and pilot. The pilot needs the ability to fly smoothly and as close to the pylons as possible. This takes practice and some competitive experience. The other two, airplane and power, are easier to come by. You can have an airplane that's capable of beating anyone on the pylon circuit if you pay close attention to several, easily overlooked details.

The Power: Notice that I said power or powerplant, and not engine. That's not a mistake, I simply mean that the engine is not all that powers the airplane. Several other factors are equally important, such as how the engine is installed, the proper fuel and propeller.

First, you have to choose an engine. Presently, the winningest engines are the

K&B Schnuerle 40 and the SuperTigre X-40. Both have advantages. The K&B runs well right out of the box. The SuperTigre needs a bit of work, but seems to have a slight advantage after it is reworked—even against the reworked K&Bs. The ABC piston and sleeve on the Tigre allows it to run race after race, while the ringed K&B normally needs rebuilding after a few races.

If you are not too familiar with the workings of engines, your best bet would be to send your engine to a customizer. These fellows will insure a proper fit in your engine and probably use a lathe, mill and honing machine to properly align your engine. However, there are a few things you can do yourself.

The most important single thing you can do to your engine is to take it apart and carefully clean it. Remove all burrs and mold flash. This can normally be done with an X-acto knife. With the

fit stock parts, and these reworked parts make things very difficult. I'm sure anyone who works on engines prefers a stock engine, preferably one that has never been run.

Having an engine capable of winning is one thing, but getting it to perform is another. You need two more things, fuel and prop.

Fuel: I set the World Speed Record for pylon three consecutive times, using the following fuel mixture: 60% Nitromethane; 18% Klotz Special Formula; 2% Propylene Oxide; and 20% Methanol (Alky). At the last NATS, I set the current record of 1:14.9 using this mixture. Naturally, hotter mixtures can be used, but remember that you not only want to go fast, but finish 10 laps several times during a meet. Hotter mixtures tend to be less consistent and are hard on plugs.

Prop: The prop can make all the dif-

ference. Getting the proper rpm to match your engine is the main thing on which to concentrate when making ■ prop. Both blades should be balanced and have equal pitch. The SuperTigre X-40 runs best when it turns nearly 21,000 on the ground. The K&B runs best at 1000 to 1500 rpm less. Two very good props to start with ■ the 9 x 7½ Top Flite and the 8 ¾ x 7½ Rev-Up. Cut each to about 8½" in length and test run them. De-pitch the tips slightly to get more rpm, if needed.

Don't expect all of the props to turn up. Although these are excellent props, many will vary 1000 rpm or more, even with the same length and pitch. A prop pitch gauge is a necessity for working on props. Each prop should be carefully checked and trued before it is run. An accurate tachometer also is an essential tool.

Engine Installation: There are several things to keep in mind when installing the engine. Use ■ good-quality motor mount, and anchor the front of the mount to the fuselage. Use an air duct in your cowl at least 3/8 x 1 1/8", and direct 50% of the air toward the head by using a small plywood baffle. Use an air exit three or four times the size of the air inlet.

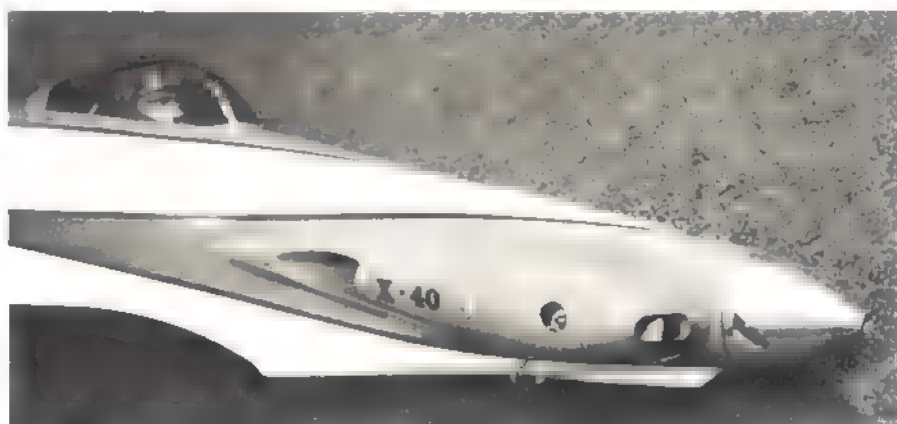
Airplane: Selection of the proper airplane is vital. Be sure to pick one that is consistently in the winner's circle. Although this is no guarantee of the best design, you will at least be sure you are competitive. Normally, those fellows doing the winning choose an airplane they feel gives them the best chance to win.

I use the Little Toni, which we manufacture at Prather Products. I haven't made any modifications to the kit, since we produced it exactly to the specifications of the airplane I fly. (AAM will have a full test report by Bob Violett on the Little Toni in the March issue—*ph.p.*)

No matter what kind of airplane you fly, there are several things to keep in mind.

(1) **Handling**—This is probably the most important factor. Your plane should handle easily (like a trainer), yet still be responsive when you want it to be. This is accomplished mainly by proper CG location, and by adjusting the throw on your aileron and elevator.

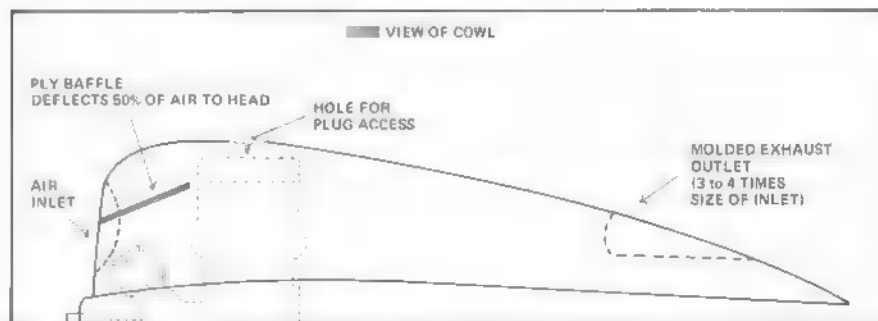
(2) **Keep It Clean**—Small details add



The aerodynamically clean X-40 exhaust. Only the needle valve is exposed to the airstream.



Terry's engine installation is a work of art in itself. See sketch for cheek cowl details.



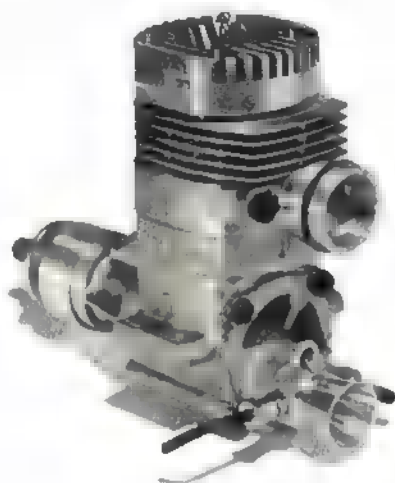
up. Keep the elevator horn inside, radio antenna inside, flush mount the wheel pants, flush mount the radio switch and keep your engine cowed.

(3) **Keep It Light**—Weight is important. Try to come in at 5 lb. maximum. You can add about 1 sec. to your 10-lap time for each oz. over 5 lb.

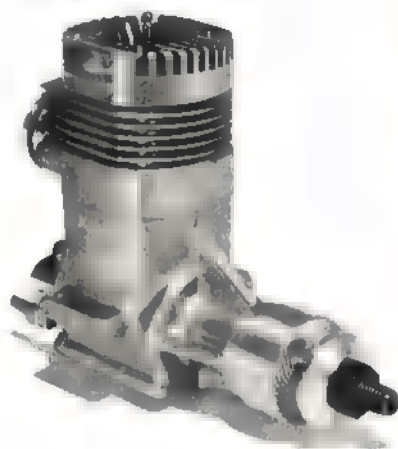
Pilot: Your flying ability is mostly ■ matter of practice and experience. How-

ever, you should watch carefully the course that others fly. If you watch intently, you will find several factors that can make the winning difference. Your controls should not be jerked at any time. The most elevator should be given at the No. 1 pylon. Pylons 2 and 3 should be a smooth application of the

(Continued on page 105)



SUPERTIGRE X-40
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TERRY PRATHER

WORLD SPEED RECORD HOLDER WITH LITTLE-TONI

PRATHER'S '74 SEASON USING THE ST X-40

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- 1st Conejo R/C Modelers Annual
- 1st NMPRA National Point Championship
- 1st NMPRA Southern Calif. District Point Championship

World Engines is extremely proud of the Supertigre X-40 engine and equally proud to announce the fact that Terry Prather has proven its capabilities as a winning competition pylon engine.

Terry Prather has just won the NMPRA National Point Championship plus the NMPRA Southern California District Point Championship. Terry feels that this ends a very successful season for himself—we whole-heartedly agree. Not only did the X-40 prove its brute power by breaking the World Speed

Record for pylon 3 consecutive times (1:17.2-'73 Tangerine, 1:15.7-'74 Bakersfield contest and 1:14.9-'74 NATS) but it also proved it can consistently be in the winners circle by winning 4 contest in a row in California. This is what wrapped up the NMPRA Point Championship for Terry.

In pylon racing it's not the fastest fellow that wins—it's the one who is both fast and consistent. When you combine consistent performance with the power of the X-40 you have a winner.

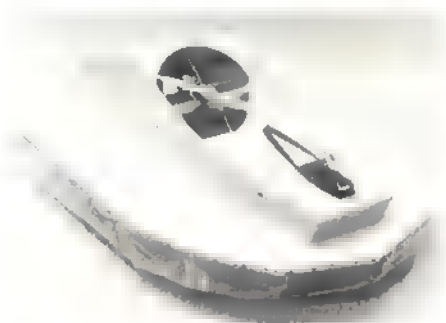
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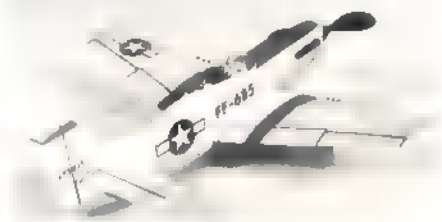
new products checklist



Venture/XR-1B Cyclone. RC enthusiasts looking for a new way to fly will be interested in this amphibious hovercraft, a great project for expert or beginner alike. Ship utilizes a 40- to 60-size engine—any engine that will swing an 11" prop. Craft uses a one-, two- or three-channel control, with combinations of rudder, motor control and thrust-reversing bucket. Even though craft is large (40" long, 30" wide), it can travel at about 35 mph on land. Kit is primarily plywood and foam, and relatively simple to construct. \$54.95. Venture AeroMarine, Box 5273, Akron, Ohio 44313.



Tower Hobbies/Power Control 200. A new item from Tower is a battery discharge analyzer which will simultaneously analyze both receiver and transmitter batteries. The unit has completely independent circuits to guarantee correct discharge of battery. By accurately timing the discharge of batteries through a clock (not included), a modeler can determine how much flying time to expect from a complete charge. Cycling also will eliminate NiCad memory, and guarantee full battery capacity. Introductory offer, \$27.95 ea. Tower Hobbies, P.O. Box 778, Champagne, Ill. 61820.



Peck-Polymers/PS1-D. Excellent scale WWII rubber-powered kit has proved an excellent flyer, with a flying weight of less than 1/2 oz. The Peanut Scale model is one of the first kits featuring 1/20" square balsa stringers, lightweight molded canopy, and spinner. Also provided are press-on decals, three-views, thrust bearings, propeller, wheels and tissue. The Mustang spans 13" and sells for \$3.49. Peck-Polymers, P.O. Box 2498, La Mesa, Calif. 92041.



R&S/F-1 Tomcat. A sleek, swept-wing aircraft kit comes from R&S Hobby Products in a fiberglass fuselage and foam wing configuration. Fuselage has built-in fin, installed motor mounts, and fiberglass belly pan. The foam core wing comes with dihedral braces and landing gear box. Stab also is foam. The ship spans 64", and is ideal for sport, or competition modelers. \$64.95. R&S Hobby Products, Inc., P. O. Box 61, Oaklawn, Ill. 60453.

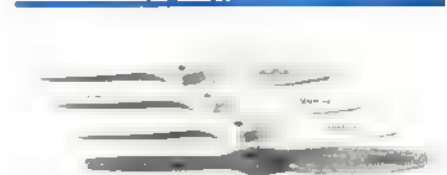


Prather/LG Accessories. Made in the most popular style, these landing gear accessories for RC Pylon racers are from Terry Prather. The wheel pants (\$9.95) are fiberglass, and made to fit on heavy duty dual gear (\$5.95). Each wheel pant weighs less than 1 oz., yet is extremely strong. Wheel pants come complete with an axle retainer set designed to hold the racing wheels firmly in place. The retainers are flush mounted, and also are available separately for \$1.98 a pair. The aluminum racing wheels are machined from bar stock, and equipped with a tough rubber tire. In 2-1/4" dia., they sell for \$5.95. Prather Products, 1660 Ravenna Ave., Wilmington, Calif. 90744.

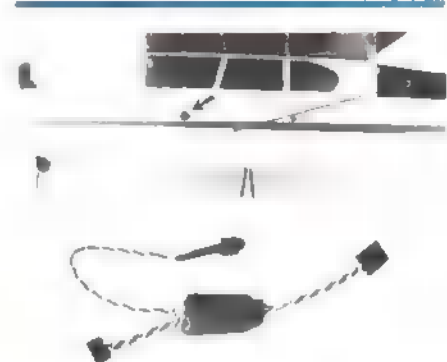


Sonic-Tronics/New Material. The popular "Nifty" Big Shot recently was redesigned with a new material to make it even more flexible and indestructible. This high-capacity fuel bulb holds 8 oz., enough for fueling small airplanes and providing plenty of prime for many flights. Bulb will adapt to fit pint, quart

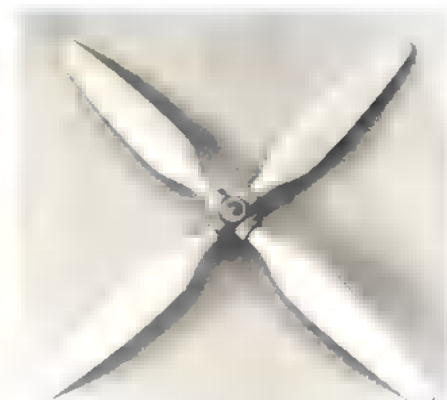
and gallon fuel cans, and sells for \$2.59. Sonic-Tronics, Inc., 2 S. Sylvania Ave., Philadelphia, Pa. 19111.



Midwest/Woodcraft Props. These Woodcraft creations feature an excellent finish and top-notch balance in blade design. The props are made to the precise blade pitch for better performance. This set of props is made especially for the Pattern flier, using 60-size engines, in 11 x 7 and 11 x 7 1/2 sizes. They sell for \$1.50 ea. Midwest Model Supply, 6929 W. 59th St., Chicago, Ill. 60638.



CYT-4/Power-CYT. An important gadget for fliers who continually push their batteries' flight time is this unit, which features an indicator light (LED) to monitor battery power from outside the fuselage. The light will go out approximately 10 to 20 min. before the full discharge of battery, allowing greater confidence. The Power-CYT is easy to mount, draws little power, and weighs only a fraction of an ounce. Two models available: standard, without plug-in harness; and deluxe, with plug-in harnesses to fit your particular three- or four-wire system. Prices are \$14.95, and \$21.95, respectively. CYT-4 Industries, 617 South East Ave., Oak Park, Ill. 60304.



Keeler Scale Propellers. Scale and Stand-off Scale modelers can save themselves work with the advent of these basswood props. The unfinished accessories are lathe-turned and then sanded smooth, ready for finishing. A variety

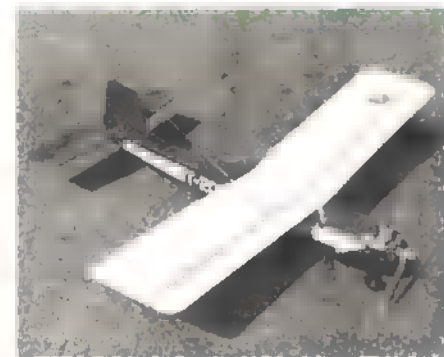
of props are available for popular scale kits from manufacturers such as VK, Top Flite, Royal, and Dave Platt. For out-of-the-ordinary propellers, custom work will be done if information is supplied. Props sell for between \$9.00 and \$18.00 ea. Ira Keeler, 330 Azalea Way, Bacaville, Calif. 95688.



Dave Platt/FW190. It may be a month or two before this hot, new, Stand-off Scale Item is ready, but get your order in now, since there is a limited production run on this kit. The FW190 won the Stand-off Scale event at the Lake Charles NATS. It is very close to scale and has excellent flying characteristics. Price and specs to be announced. Dave Platt Models, 1300-C West McNab Rd., Ft. Lauderdale, Fla. 33309.



Bob Holman/Hellcat Package. Plans and accessories are available for Brian Taylor's 1 1/2" scale F6-F5 Hellcat. The fantastic scale model spans 64". Three sheets of detailed plans are provided to make assembly easier. As shown in the photo, a fiberglass cowl and scale canopy also are provided. The cowl includes oil cooler duct panel lines, and rivets to match fuselage detail. The complete package sells for \$22.00. Scale prop nuts shown are for the Hellcat, F4-U and P-47; \$3.00 ea. Bob Holman Plans, P. O. Box 741, San Bernadino, Calif. 92402.



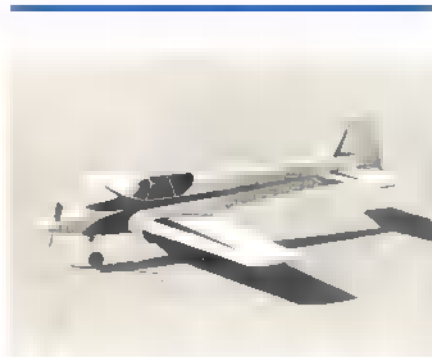
Bridl/T-20 Trainer. This 45" span trainer is third in Bridl's line, and is for 15-25 size engines. The ship flies great on rudder or four-channel control, and uses trike gear for rough field flying. Modelers with large hands will appreciate this airplane, since the fuselage width is almost equal to Bridl's 40-size airplane. Extensive instructions are included for the entire construction process. The kit is balsa and ply, with all parts machined, and special hardware is provided. \$34.95. Bridl Hobby Enterprises, 1611 E. Sandison St., Wilmington, Calif. 90744.



Airtronics/Super Questor. All-balsa sailplane is great for the novice because of its ease of construction and top-notch flying characteristics. The Super Questor is for two-channel control, and its 80" span wing can be built up with either poly or dihedral. For easy transport, the wing is in two pieces, and plugs into fuselage. If you're familiar with Airtronics kits, you know you can expect quality, machined-balsa parts which fit well, making kit construction a breeze. \$35.95. Airtronics, 45 E. St. Joseph St., Arcadia, Calif. 91006.



Royal Products/WWI Wonders. These crazy 11 x 17" drawings are printed in brown ink on buff paper, suitable for framing. The drawings have the captions, "God Save the King," "Over There," "Vive France," and "Deutschland Uber Alles," for their respective countries' airplanes. They are great for desk den, and sell for \$1.49 per package of four. Royal Products, Inc., 790 Tennessee Ave., Denver, Colo. 80223.



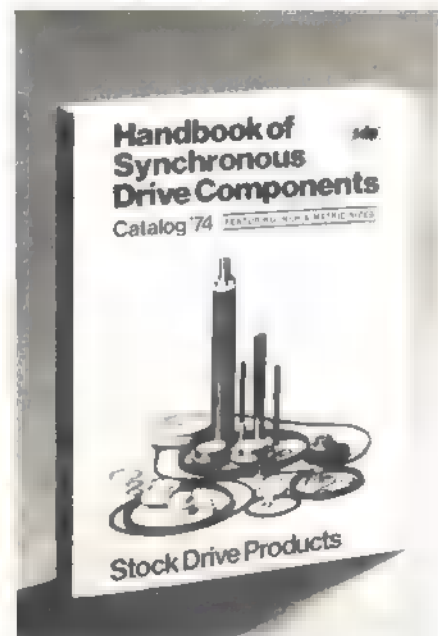
RB Products/Cuda. The popular Cuda Pattern ship is being produced in a two-color, fiberglass fuselage, and with fiberglass covered foam core wing and stab. The gelcoated fuselage has the motor mount molded in, and the mount comes drilled and tapped to fit either a Webra or Veco 61 engine. Stab is one piece, and in the future, a one-piece, two-color molded wing will be available. Because of extensive prefabrication, this ship has rapid-fire assembly. Kit is adaptable for standard or retract gear. \$119.95. RB Products, 1874 N. Landon, Camarillo, Calif. 93010.



Harlan/Micrometer Stripper. Unbelievable accuracy can be obtained through the use of this balsa stripper, which incorporates two micrometer heads for accurate adjustment. The unit includes a smooth redwood base, heavy aluminum straightedge, plus a precision-machined blade holder to assure square cuts and long blade life. The stripper is two ft. long to accommodate any indoor needs—\$18.00. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass. 01778.

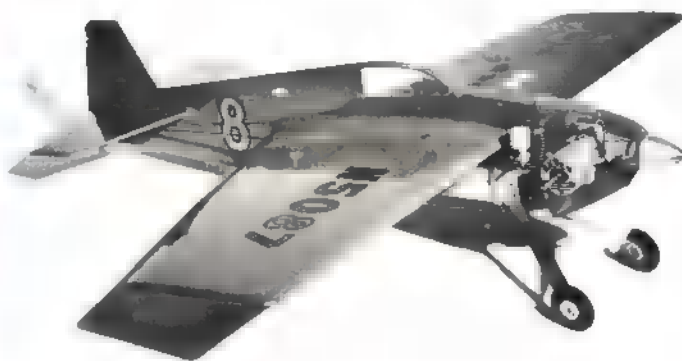


ADC/Mini-Belt Sander. This versatile, hand belt sander is ideal for modelers and handy to use. Its patented locking system holds sandpaper tight, so that the sander can be used in any position. Flat surfaces are padded, and unit has both smooth and sharp curves to match all sanding contours. Replacement mini-strips are available in medium or fine garnet paper; wet or dry replacement strips also are available. \$1.50. Applied Design Corp., 5531 Shore Drive, Palos Verdes Peninsula, Calif. 90374.



Stock Drive/Handbook. Yes, this does say the "1974" catalog, yet this handbook will be current information throughout '75, and into '76. It contains a wealth of pulleys, belts, chains, shafts, bearings, and other hardware to interest helicopter and car "do-it-yourselfers." Book also has a large technical section, containing much design and application data on products. Stock Drive Products, 55 S. Denton Ave., New Hyde Park, N.Y. 11040.

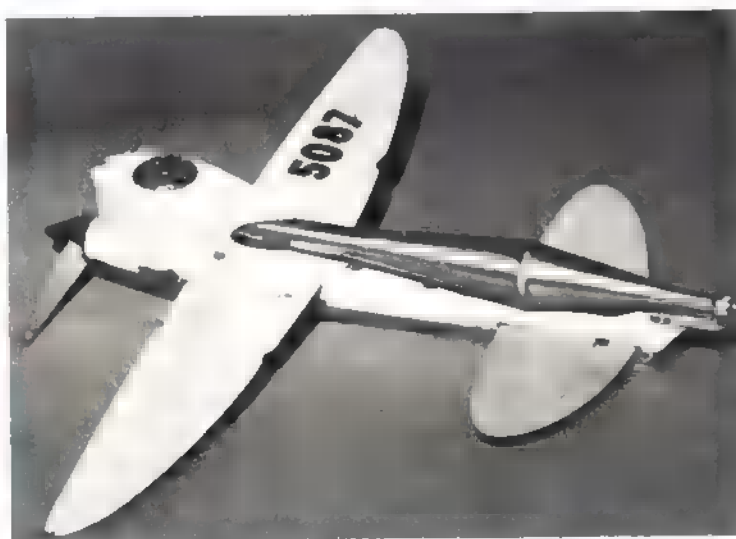
"TWO SPEED SHIPS"



Neat, clean lines and ample wing area add to the performance of the Pitts Racer. Smaller than other airplanes, it was called "Little Monster."

Pitts Special

Here are the secrets of building and flying a winning Goodyear racer. / by Glenn Lee



This model has been flown in competition for three years, and a few "war wounds" are visible. A model lasts much longer if you use proper material.

Piped Bee

A true pro in Class B Speed tells how to break 200 mph. / by Glenn Lee

The Pitts Special Goodyear Racer was designed by the same Curtis Pitts who is now producing the well-known Pitts Special acrobatic biplane. It was flown in the National Air Races back around 1949; photos and three-views are shown in the May, 1950, issue of *Air Trails* magazine.

It was also called the "Little Monster." I don't know if this name came from its small size or its flying characteristics! However, it makes a very nice control line model that flies fast, and handles well.

Scale racing is one of the most popular control line events flown. If you want a different, smaller, but better flying model, try this one. I went through the usual Shoestring, Argander, and Mirage designs before finding three-views of the Pitts. I like it best of all. The small size gives good speed, yet the ample wing area allows you to glide as far as needed.

CONSTRUCTION

Begin construction on the wing. As glued parts are drying, you can switch to the fuselage and stabilizer. Decide now whether you want a light model, or

This model is the first one that ever went over 200 mph for me, and then the timers goofed! They timed me for six laps instead of seven, which came out at 250 mph. We didn't think that was quite right!

Another speed flier timed the flight at 209 mph. The engine was damaged, and the best succeeding flight was only 183+. The present Class B record is over 193, so a 200 mph flight is believable. I have had several flights in the 180s.

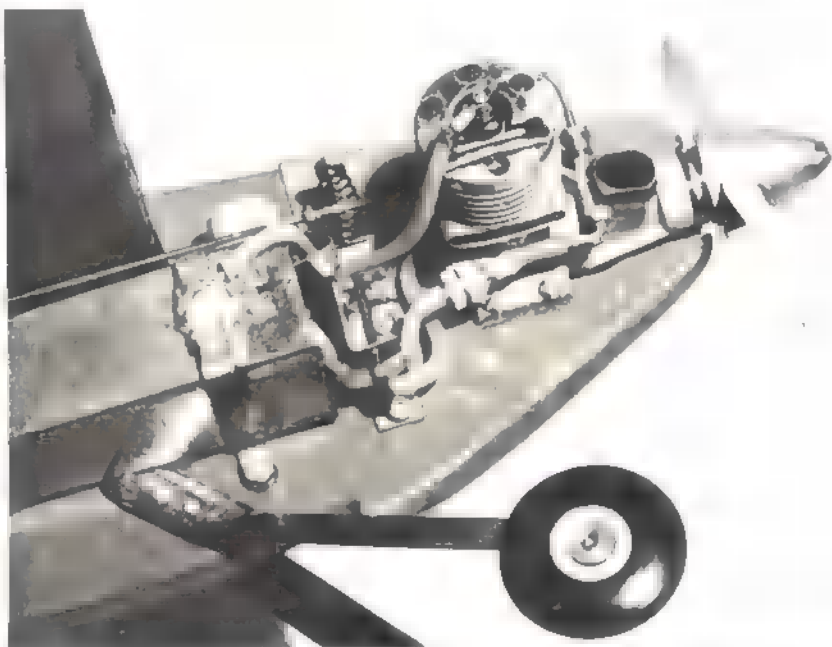
Almost all speed jobs have similar construction and design techniques, which have been developed over the years. I have always admired Bob Lauderdale's elliptical wings and stabs on his Dizzy Boy and Dizzy Bee. They always looked neater and faster to me. I doubt if any special wing shape is better than another—it is a matter of personal choice.

You don't need a machine shop to fly speed successfully! Soreheads and so-called "experts" use this excuse, when they are just too dumb to learn how to get an engine to run. Many of the top speed fliers use stock engines,

a heavier one that will last longer. The heavy, RC grade of balsa is much stronger than the light "C" grain stock. A light airplane does not fly faster than a heavy one, but it can be pitted a little quicker.

The wing is about 1/2" thick at the center, and tapers to about 7/32" at the tips. A thin wing will go slightly faster straight and level, but loses a lot of speed when you try to pass someone. Also, you need room for the bellcrank inside. Glue pieces of 1/16 x 3", or wider, balsa together to the shape of the wing outline, using Titebond or Elmer's glue. Taper the 3/16 x 3/4" spruce leading edge reinforcement, as shown, and glue on top of the sheet. Cut the tip and center ribs from 3/16" sheet and the other ribs from 1/8" sheet. Notch the left wing ribs for the leadouts, before gluing in place. Carve or file the spruce leading edge to match the tip's airfoil shape—a wood rasp works very well for this. Install the 1/16" plywood bellcrank mount.

When this assembly is dry, install the bellcrank, pushrod, and leadouts. I prefer the round bellcrank, but other types work just as well. Solder the nut on the



Closeup of the engine, fuel shut-off, and tank. The starting battery connects to the tank and the brass plate under the motor mount. The fuel shut-off pinches both fuel line and pressure line.

bellcrank bolt, to be sure that it will not come off. Sand the trailing edge of the balsa sheet to match the wing ribs, and then add the top sheet, using 1/16 x 3" balsa. Pin it to a flat board or bench top to prevent warps.

Fuselage: Cut the fuselage from 3/8"

sheet. If you catch your models by the wing, I suggest using the hardest RC balsa you can find. If you catch them by the nose, softer balsa can be used. The fuselage tends to break just ahead of the stab, if you don't catch it smoothly. Saw slots for the hardwood

which have been finely "tuned" by learning the proper fitting tolerances and break-in procedures.

About six important things affect the performance of a speed model: the engine, the airplane, the propeller, the fuel, the takeoff dolly, and *you!* We will explain these one at a time.

Engines: Class A 15 engines with pipes have been available for several years, but the larger 29s and 60s were not readily available, until recently. Now, OPS 29s and 60s are here, and J & S 29s are available. Performance Parts and Service has the TWA engines, and Arlie Fridley is also working on new engines.

Although I made the engine in my model using a TWA crankcase and some Tigre parts, the plans show the OPS 29. It is an excellent engine, and almost identical in design to mine. Speeds over 180 mph will be common with this engine.

Since the engine makes the airplane go, you either get a good one, or forget it!

Airplane: This model was designed for stability. You really don't have time

to fool around at speeds over 180 mph! Two things contribute to this stability: the symmetrical airfoil wing set at 0° incidence, and the V-stabilizer. You need no lift from the wing at speeds over 150 mph. If you build in lift, it must be counteracted by a lifting stabilizer, or down elevator. It is very tricky to get things balanced. It is much easier to use a fully symmetrical airfoil section.

The V-tail has a very definite purpose. Aerodynamic information shows that a thin, flat airfoil (such as we have with a plywood stab) has little lift at low angles of attack. This means that the model can change its attitude quite a bit before the stabilizer "takes hold" and corrects. This correction occurs suddenly, and the model literally "jumps" up or down several feet. Turbulent air makes such an airfoil much more ef-



A metal fuel tank is more reliable with tuned pipe engines. The black tubing is for pipe pressure, and the rear tubing is for filling the tank.

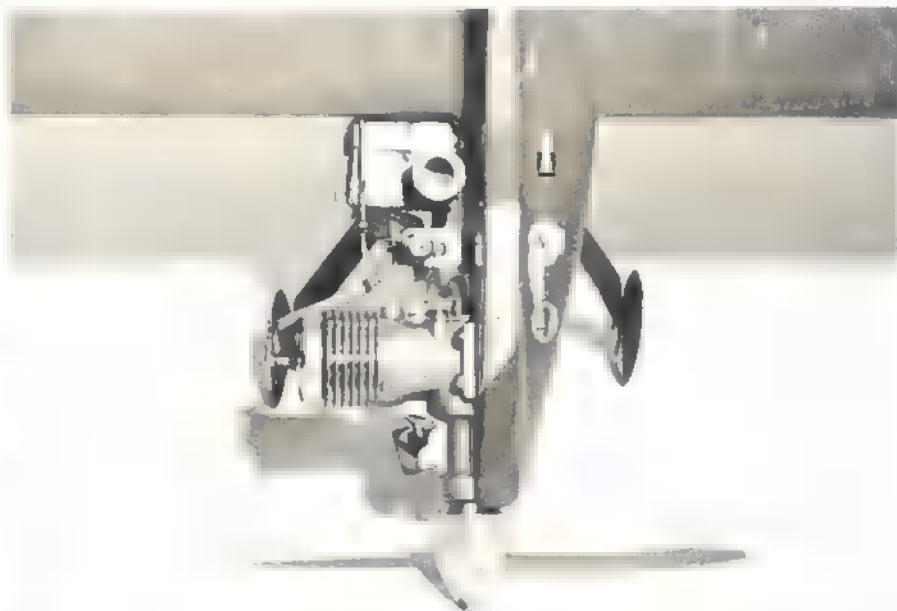
PITTS SPECIAL

motor mounts, glue them in, and glue on the 1/16" plywood doublers. Again, use a white glue; it is much stronger and more flexible than epoxy. Use a couple of small nails to hold the plywood doublers in place, and clamp them tightly, or weight them down, until the glue is dry. When it is dry, saw the slots for wing and stabilizer. Make sure both have 0° incidence.

The stab and rudder are cut from medium or hard 1/8" sheet balsa. I prefer cloth hinges, but you can use plastic ones.

Sand the fuselage to a streamlined shape and drill motor mount holes. Use blind nuts, and put a drop of glue behind them to hold them in place. Glue the rudder, stab, and wing to the fuselage with white glue. Make sure the wing leading edge is glued very well to the fuselage, since they always crack there. Use epoxy glue to fasten the tail skid—it takes a beating during a race. Use white glue or Ambroid for the cloth reinforcements on the rudder. These joints also crack on rough landings.

The cheek cowl is there to reinforce



The streamlined cheek cowl reinforces the wing/fuselage junction, and makes a much stiffer assembly. This reduces engine vibration, and results in higher rpm for better performance.

the wing-fuselage joint, giving a much stronger, stiffer assembly. Carve it from medium or hard balsa. Grease your motor mount bolts with Vaseline and have them in the blind nuts to keep the glue out of the threads when you glue the cowl in place.

Add a fairly large fillet at the wing-

fuselage joint. This can be leather pattern makers fillet or compounds of epoxy, microballoons, or balsa dust. Blend the nose of the airplane to the shape of the engine spinner and add fillets to the cheek cowl joints. Sand the entire airplane before finishing.

Finishing: The easiest type of finish

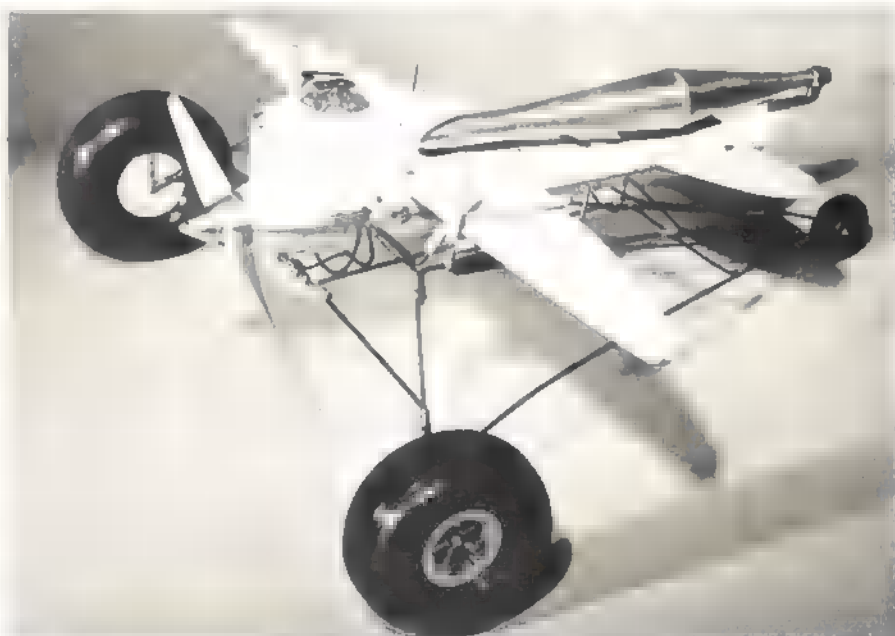
PIPED BEE

fective. So, we raise the stab tips high enough to be above the wing, and the turbulent air from the wing is enough to give adequate stability.

Props: Speed props are available, and it is a matter of finding out what size your engine will turn. Piped engines usually take off very rich, and the rules say that you must not "whip" the model to get the pipe working. So, you must run a smaller prop, to allow the engine to "come in" by itself. Start with a 7 x 9; if it does not work, trim the diameter to 6 3/4" and try again. The weather and your fuel have a great effect on which prop you use. You may vary from a 7 x 11 to a 6 3/4 x 10.

It is very important to balance your propellers. Vibration at high rpms can shake the airplane apart, with devastating results. The best type of balancer is one like that which Prather Products has for sale.

If you are going to become a serious competitor, you should also have a prop pitch gauge. Manufacturers cannot measure each individual propeller they make, and the marked pitch is rarely correct.



A reliable dolly is a must for successful speed flying. The model is locked in until sufficient speed is built up to lift it off the ground; the trip wire then releases the model.

Fuel: Many modelers still believe that all the top speed fliers have a "secret" fuel ingredient that makes their engines run so well. There are such things as hydrazine and tetranitro-methane, but they are banned by AMA Rules. They are also extremely dangerous,

since they form explosive compounds and poisonous fumes. Besides, you do not need such ingredients in your fuel.

There are four things that you need for speed fuel; oil, nitromethane, methanol, and propylene oxide. Of these, the propylene oxide is hazardous.

PITTS SPECIAL

is polyester resin undercoats and epoxy paint. Apply one coat of resin, either K&B or Francis Products, and sand with 220 grit sandpaper. Fill in nicks or holes with body putty. Apply a second coat, sand with 220 grit, then 320 and 400 wet or dry sandpaper. Wipe or blow off the dust, and then spray or brush on a few coats of K&B or Hobbypoxy paint. Follow directions on the cans. When dry, sand with 400 sandpaper, used wet—dip the sandpaper in water every once in awhile as you sand. Polish with auto rubbing compound and you will have a beautiful, polished model to be proud of.

AMA Rules state that you must have scale racing numbers on wing, fuselage, and rudder. The Pitts' number was eight, so add a large number eight to the top left and both fuselage sides. Add an "N" in front of your AMA number, and apply to the upper right wing and both sides of the rudder.

Landing Gear: We have found that the 1/16" titanium sheet landing gear is superior to music wire, because it does not flex as much when landing. If you

fly off grass fields, the gear should be swept forward 45°, to prevent nose-overs. On hard surfaces, the straight down gear allows much nicer "Team Racer" type landings.

Fuel Tank: A tall, narrow tank will give steadier runs than a wide tank, so it is worthwhile to make your own. However, a Don's Custom tank with quick-fill is available at hobby shops, if you don't feel like making one.

A fuel shut-off is also worth building. It is nice to pick your time for pit stops, and a lean engine setting can be stopped immediately. You should be able to build one in a couple of hours. It pinches off both fuel line and pressure line with a quick "blip" of full down elevator. Use surgical tubing or soft silicone tubing, and check to make sure the shut-off seals both of them.

The fuel you run is determined by your engine. Some will take up to 70% nitromethane. We use standard speed fuel such as K&B and Go-Pop 55%. A very good fuel formula is 12% castor oil, 10% Klotz oil (or Ucon), 60% nitromethane, and 18% methanol. Your engine also determines what prop to use. Most run well with the Tornado 7 x 6

nylon, Keller, or Taipan 7 x 5½. Don't bother to see what others are using, just try different props on your model.

Engines: A complete article could be written on engines for this event. A very fast engine is useless if it will not restart, and the restarting is the greatest problem. You must have a perfect fit between sleeve and piston to achieve high speed plus one-flip restarts. If you are going to be a serious competitor, this usually means extensive engine rework.

High-performance engines wear out rapidly, so it is worthwhile to chrome plate the sleeve. The engine will not go any faster with chrome plating, but the lifetime is greatly extended. There are persons like "Doc" Anderson who will chrome plate the sleeve, and fit the piston to it, for about \$10.

Most engines need a reasonable break-in procedure before they will run steadily. Start by running an 8 x 4 propeller and stunt fuel, for about half an hour on a test bench. Then switch to a 7 x 4 and stunt fuel, and run until the engine will hold a setting and run steady for a full tank. Install it in the airplane

(Continued on page 105)

PIPED BEE

It is extremely flammable, boils at 92°F, and can poison you through the skin if spilled on your hands. Vapors are also irritating and harmful to your lungs. If you use it, keep it cool in a foam cooler, wear rubber gloves when mixing, and do not "sniff" the bottle.

Several oils are available: Klotz, Ucon, castor oil, oxidized soybean oil, Lubricin, and Jett and Shannon claim to have a better oil for sale. Some fliers use as little as 15% or even 10% oil in their fuel. I don't like to ruin my engines, so I never use less than 20% oil, and use 22% for test flying. Here are some typical fuel formulas:

No. 1 Test Flying

- 10% Castor Oil
- 12% Klotz or Ucon LB625
- 0.5% Lubricin
- 40% Nitromethane
- 37.5% Methanol

No. 2 Test Flying and Some Contest Flying

- 10% Castor Oil
- 10% Klotz or Ucon LB625
- 0.5% Lubricin

- 60% Nitromethane
- 19.5% Methanol

No. 3 Contest Flying

- 20% Klotz
- 0.5% Lubricin
- 5% Propylene Oxide
- 74.5% Nitromethane

Notice that there is no propylene oxide in fuels 1 and 2. When mixed in a fuel containing methanol, the propylene oxide generates excessive heat. For this reason, it can be used to keep a glow plug ignited in exceptionally bad weather. It also degenerates in the fuel, so mix only a small amount for the day's flying.

Fuel No. 3 is our standard speed fuel formula, and is varied to suit weather conditions. In California- or Texas-type weather, you can increase the propylene oxide content to as much as 20%. In other words, 20% oil, 20% propylene oxide, and 60% nitromethane. Again, the fuel seems to degenerate with time, so mix only small quantities. In the East or Midwest, where there is high humidity, you will sometimes go faster with less than 5% propylene oxide. You will

have to learn to match the fuel and propeller to suit weather conditions.

Takeoff Dolly: The takeoff dolly shown is one that I have been using for several years. This is called a "mouse-trap" dolly, since it locks the airplane in until sufficient speed is built up to lift the dolly off the runway. The trailing wire then releases the airplane. Some speed fliers use four-wheel, non-locking dollies, while a few use dollies with pins that fit holes in the speed pan.

I firmly believe that the "mouse-trap" is more reliable, and that it takes more skill to get the other types working properly. A good speed job is no good if you can't get it off the ground, so take care to build a good dolly.

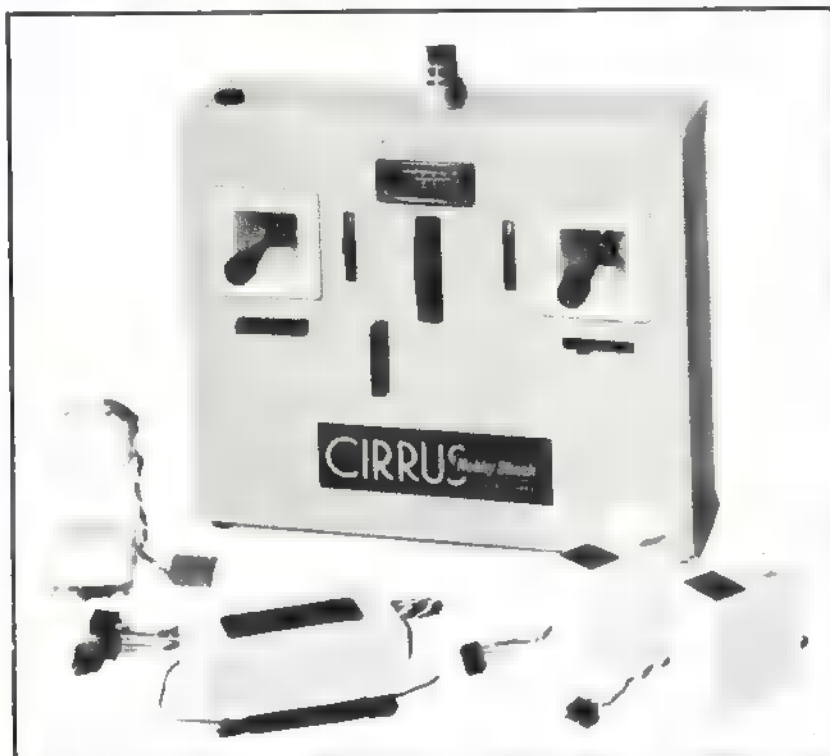
The "You" Factor: It is up to you to get everything working together. If you are still convinced you want to build a speed job, let's get on with construction.

CONSTRUCTION

Several items are needed to build this model: a good 29 engine, a mono-line unit, a speed pan, and several pieces of fairly good wood.

(Continued on page 105)

HOBBY SHACK ANNOUNCES OUR TOTALLY NEW 1975 CIRRUS GUIDANCE SYSTEMS



... the 'THREE' that's loaded, not
a stripped down version, for only
\$89.99

In 1975 you would expect a lowered price on radio gear to mean you get less. However, with our new Cirrus Sport Three you get more than ever: New circuitry for outstanding performance, a meter on the transmitter to eliminate the guess work about batteries, two sticks with throttle on the left stick instead of the cheaper more commonly found trim throttle lever, trim on ALL control functions including throttle, easy Ni-Cad conversion not only for the airbourne but also the transmitter, servo trays and a frequency flag are included with each system (no extra charge to you) and we have added a convenient neck strap for those of you who care to use them.

Not only do you get all this for our special introductory offer of \$89.99*, but we also changed the color to a rich black case with chromed gimbals — like an expensive camera, you'll be proud to show off your new Cirrus equipment.

On top of that, you'll get our exclusive 180 day guarantee — FREE PARTS and labor. Also, if within that first 180 days you are unfortunate enough to crash by your own error, you will be charged only 1/2 for labor and get a full 25% discount on all parts.

Quite possibly the best buy in the world of any radio system is found on our new 1975 Cirrus radio control system — the "THREE" that's loaded, not a stripped down version for only \$89.99*.

CIRRUS THREE includes a three channel receiver, dry Cirrus three channel transmitter, 2 mini-servos, dry airbourne battery pack, switch harness, servo trays, frequency flag, neck strap, 180 day warranty, and instruction book.

Cirrus Three system w/2 servos **\$ 89.99***
Cirrus Three system w/3 servos **\$109.00***
Cirrus Three airbourne nicad pak/chgr... **\$ 16.00**

New Cirrus Sport Four with servo options

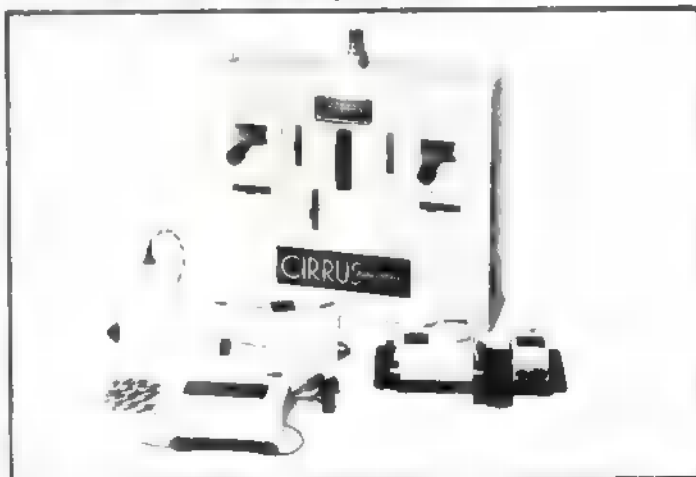


Our new Cirrus Sport Four, with two servos, allows a fellow to increase his system to full-house proportions at a later date, and yet purchase this all Ni-Cad radio for an unbelievable \$139.99*. Here is a radio system that can grow with you, it's really up to you. Our Sport Four is a superb radio guidance system that also has our full 180 day warranty with the crash repair included as described above for the three channel.

CIRRUS SPORT FOUR includes a four channel transmitter complete with Ni-Cads, four channel receiver, 2 mini-servos, Ni-Cad airbourne battery with charger for both transmitter and the airbourne, servo trays, switch harness with charging plug, frequency flag, instruction book, and our full 180 day warranty.

Cirrus Sport Four system w/2 servos (as described) **\$139.99***
Cirrus Sport Four system w/3 servos **\$159.99***
Cirrus Sport Four system w/4 servos **\$175.00***

New 1975 Cirrus Super Sport Six



Our top-of-the-line system is the deluxe Cirrus Super Sport Six channel set incorporating all the really terrific features offered in our new 1975 Cirrus design. Our all new Cirrus mini-servo is the best to date with good electronic design and even more important, rugged heavy duty servo gears. Once again we emphasize that the Cirrus label for 1975 means the absolute finest quality we have ever offered. To back up this claim is a new 180 day warranty (a full six months).

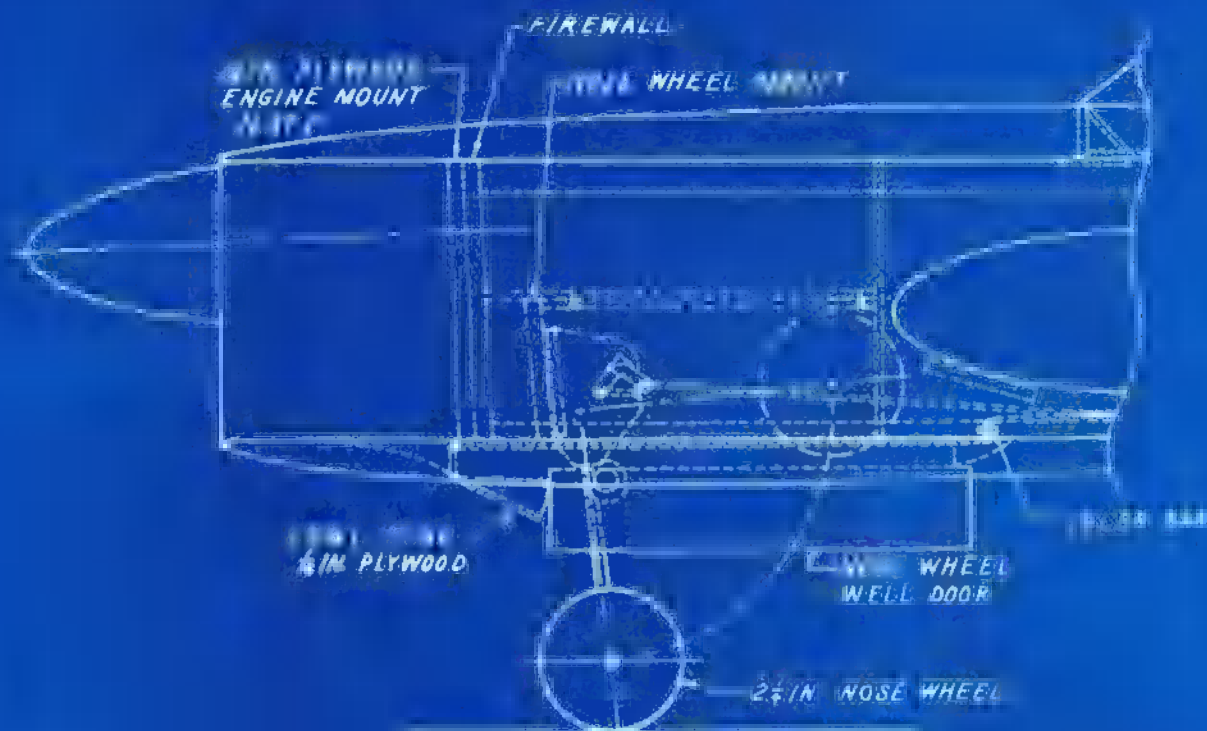
CIRRUS SUPER SPORT SIX includes transmitter, six channel receiver all Ni-Cads in the transmitter and a Ni-Cad airbourne battery, separate charger for the batteries, four Cirrus mini-servos, servo trays, instruction book, frequency flag, neck strap, and full 180 day warranty.

Cirrus Super Sport Six w/4 servos **\$189.99***
Cirrus Super Sport Six w/3 servos **\$169.99***
Cirrus Super Sport Six w/5 servos **\$209.00***

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INNOVATIONS

Three ideas that you can try on your next model by James D. Brown

Retract landing gear are common today for the purpose of making an airplane with a sleek appearance as well as making it aerodynamic clean (the spectators like them, too).

However, "clean appearance" in mind is not the only mode of thought. Three innovations were developed to overcome some of the problems.

(1) Slide in wing: The purpose of the slide in wing is to give a clean fuselage. Using this concept for wing retraction it is possible to build an aircraft with retractable gear that has the clean appearance of a fixed gear strut.

(2) Canopy module: The design of this unit was necessary to support the slide in wing concept. The module allows access to the wing mount area.

Additional advantage: it is possible to attach mod-

(a) The radio can be located in the fuselage. It is possible with the wing installed, making it possible to observe the aileron in their true operating environment. (c) This hatch makes access to the engine possible without the usual opening, parting lines, screws, and/or rubber bands associated with hatches; it is as if that were the finish on an airplane.

(3) The engine can be removed and still be in the fuselage. The engine and exhaust the cowling. The well to cool the engine. Ad. what can be done to cool the engine. Chop a hole in the

The plane truth— Heathkit R/C accessories help you get more out of your hobby for a lot less money



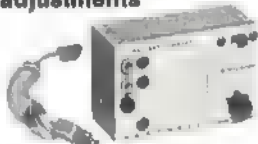
Every modeler knows about Heathkit R/C gear—3 and 4-channel transmitters with single and dual-stick control, receivers, standard, mini and sub-mini servos. And everyone knows ■■■ offer complete systems at sizeable discounts.

But ■ lot of R/C'ers don't know about the complete line of Heathkit accessories. They're designed to give you ■ little edge on the competition and to make flying more fun.

And whether you buy an accessory or ■ complete system, you'll get more performance for every dollar you spend. That's because Heathkit products come in money-saving kit form. Since you build it, you can also repair it—and that means fewer hours grounded for expensive repairs.

So send for ■ free copy of our 1975 Heathkit Catalog. You'll ■■ why Heath is one of the best known names in the R/C field.

Servo Simulator takes ■■ guesswork out of servo adjustments



Takes the place ■ both transmitter and receiver when you're making servo adjustments. You ■■ use it at home with 120 VAC power or as ■ portable with its optional built-in batteries. When it's connected to an AC power source, it doubles ■■ a charger for ■■ and glo-plug batteries. Indicator light shows battery condition. Includes cable for Heath 405-series ■■■. Also works with many other brands.

Kit GD-1033, ■ lbs.,
available21.95*

Thumb®Tach to keep your model engine at peak performance



■ super performance accessory that lets you adjust engine rpm ■■ accurately than ■■ by ■■ It's ideal for selecting glo-plugs, gears ■■ props ■■ making needle valve adjustments. It works without touching or being connected to the engine! Measures rpm in two ranges ■■ and 0-25,000.

Kit GD-69, ■ lbs.,
available21.95*

Ultrasonic Cleaner gets small parts really clean



Just fill the 6x4x2 3/4" tank with the solvent or detergent solution you normally use and put ■ the part you want cleaned. In just a few minutes, ultrasonic cleaning action removes dirt ■■ deposits from even the most intricate parts. It's ■■ great for cleaning most jewelry, watch parts, glasses, dentures and small paint brushes.

Kit GD-1150, 5 lbs.,
available59.95*

Weather Station— 5 instruments in one for your "control tower"



Tells you when the weather's right for flying. The ID-1290 monitors indoor and outdoor temperature, barometric pressure, wind speed and wind direction with true 18-point resolution. Wood-grain plastic plaque sits ■■ desk or mounts on wall. Wind cups, weather vane and temperature sensor mount on TV mast. Optional connecting cable comes in multiples of 50'.

Kit ID-1290, ■ lbs.,
available99.95*

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Units of Schlumberger Products Corporation
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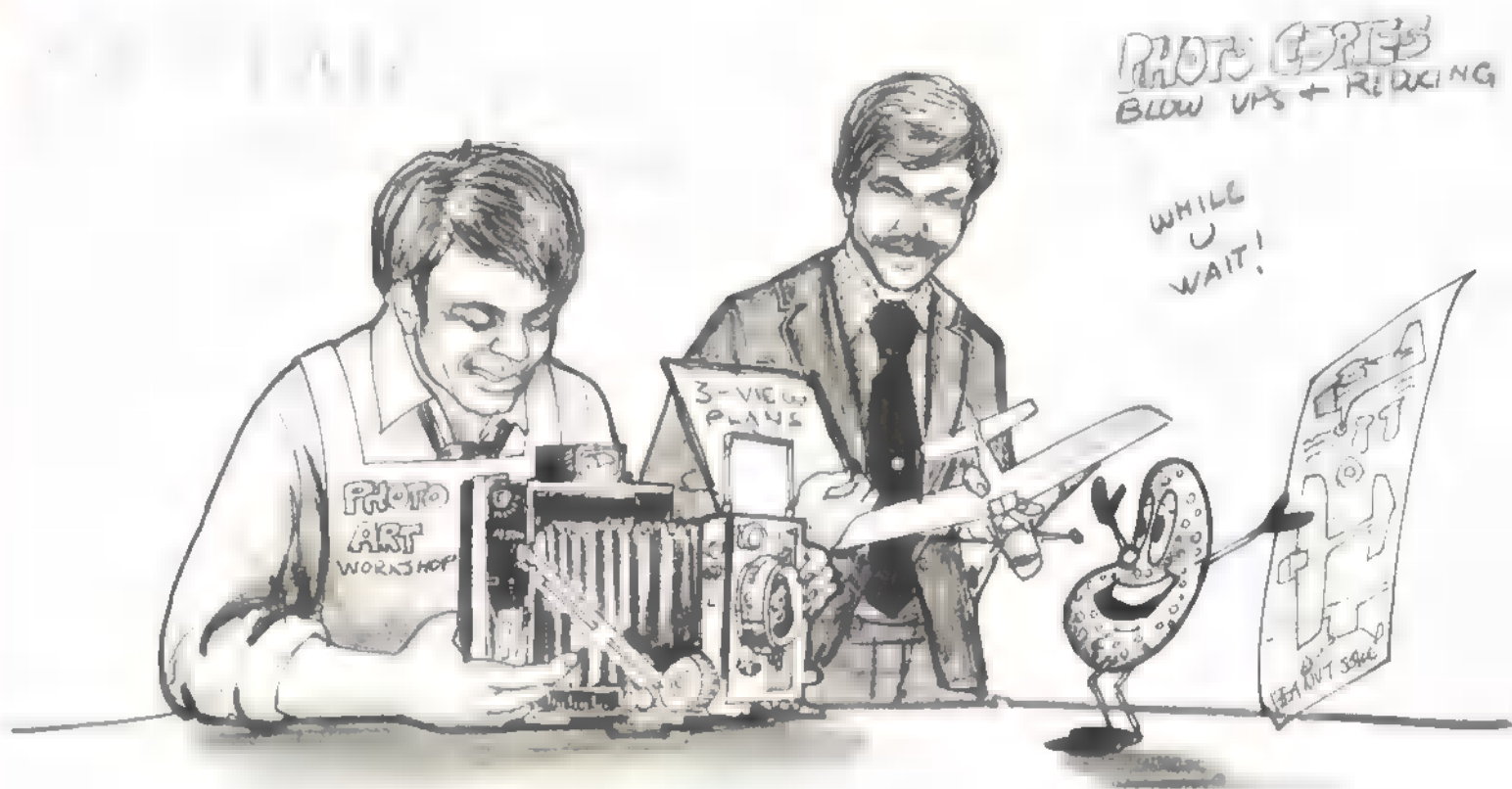
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Shelling Out Peanuts

Instant Peanut plans are as close as your local photo shop. /by Larry Kruse

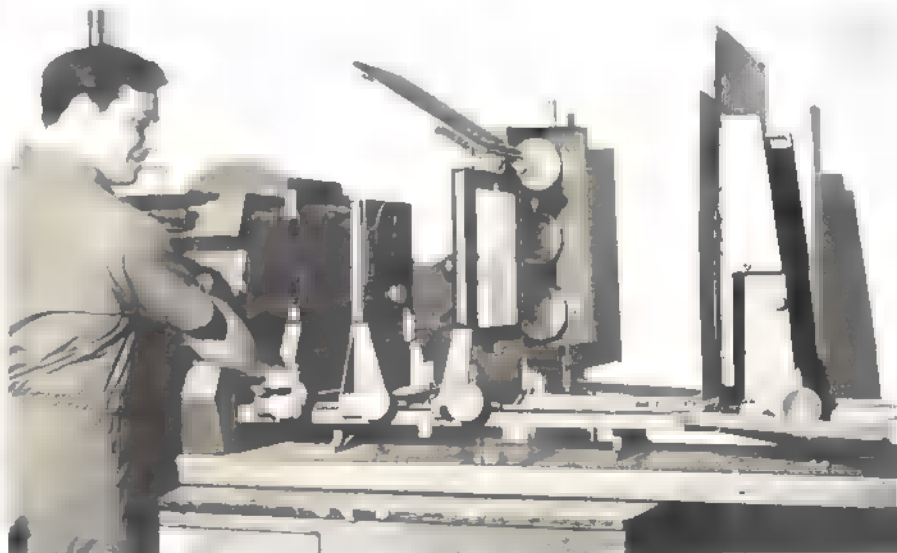
Since the advent of Peanut Scale and its subsequent popularity, several manufacturers have come out with excellent kits and plans for the little jewels. However, the avid scratch builder who wants to make a slight departure and produce his own unique model inevitably is faced with the rather tedious task of scaling up a three-view drawing.

One of the simplest and most accurate methods of scaling up drawings for Peanut Scale can be found at local graphics or printshops. Most of these establishments have photographic equipment for offset printing, which can easily be used to enlarge drawings to Peanut Scale size.

As a first step in the scaling up process, the three-view can be placed on the copyboard of a camera and a negative made. After developing, the negative is cut into three sections, containing top-view, side-view or front-view of the subject.

The top-view negative is then reinserted into the camera's negative clip, and the camera is used as an enlarger to blow up the top-view to appropriate size. Because the critical dimension of Peanut is its wingspan, the image should

be enlarged to the point where the wingspan of the top-view measures 13" or less. It's best to establish the camera setting and focus precisely, since a small amount of line-width fuzziness definitely will increase if the camera is the least



Ray Bachura, graphics instructor, adjusts bellows of horizontal camera for accurate focus.



Ray checks the top-view of the Ole Tiger negative for clarity.

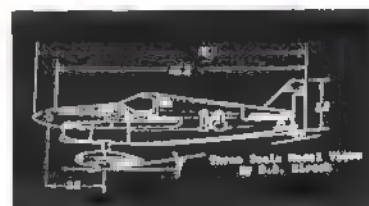
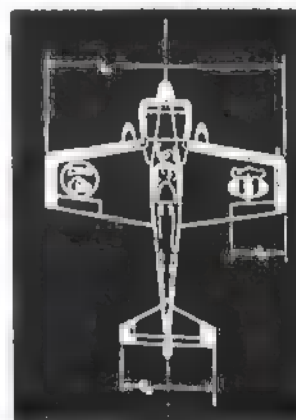
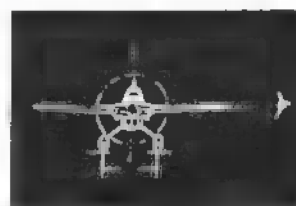
The results speak for themselves. A plain Peanut plan painlessly prepared.



bit out of focus, resulting in inaccuracies in the final model. Once the camera setting and focus are established for the top-view, the scale will remain constant for the other two views.

The final process of printing the three-views will provide ■ Peanut enthusiast with ■ quick and accurate scale outline onto which rib-spacing, formers, and spars can be drawn and redrawn with ■ grease pencil. When these are firmly fixed, it's ■ small matter to trace the entire plane onto white butcher paper for actual building.

(Note: Most three-view drawings from books and magazines are protected by copyright laws. You can usually reproduce them for your own use, but if you sell or distribute them, you had better check with the publisher first.)



The resulting separated negatives should be viewed ■ a light box. Any flaws in the negatives can be opaqued with special photographic liquid, if necessary.

The Ugly Peanut

Ugly at first sight! When are you going to take it out of the crate? Why don't you paint it green so you can hide it in the grass? You can imagine the ribbing that homebuilt designer Joe Lacey must have to take about his M-10. Personally, I have never seen an uglier airplane, unless, of course, jets qualify. Neither have I ever seen such genius and mastery of utter simplicity in a homebuilt ship.

Lacey made the M-10 for the explicit purpose of demonstrating that anyone can, if he wants to, build a very flyable and useful airplane. His prototype is simple, tough, and suited for towing behind a VW Bug with the wing (which can take 9 Gs) pivoted 90° on top of the box fuselage. It weighs only 638 lb., will fly 1,000 miles on 47 gallons of gas, will do 40 mph with the nose up and 150 with it down! The plane is equipped with dual controls, a Continental C-90 engine, and—with the second seat removed—sleeps one! Joe built the original in only 400 hours. And would you believe that he even sells the plans for eight bucks? If you try real hard, you can spend more than that for some *model* plans!



If you're not really into scale, or at least rubber scale, you might ask yourself why anyone would want to build anything other than a P-38 or Barling Bomber. A fair question. To an enthusiast hung up on the BD-5/Lear Jet school of design, I can only say, "Forget it!"



Aptly numbered, EL-UGLY is a 9½ gram Peanut that will fly a minute — a plastic prop.

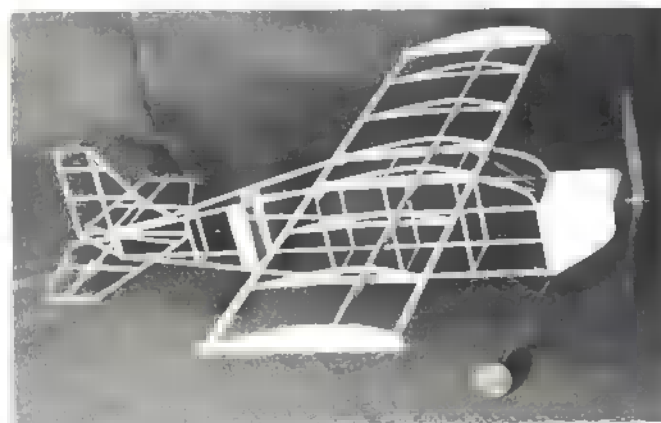
It may be ugly, but it sure do fly. / by Bill Warner

For someone who appreciates a plane which can be built quickly and flies magnificently, the question of "why" never enters into the equation.

Most of the problems which plague the Peanut Scaler already have been solved by the original design. I know of no other Peanut model which incorporates a finer balance of desirable characteristics: a wing area approaching 40" sq., a high wing which mounts easily *on top* of the fuselage, a wing which can easily be built in  piece, super-strong nose with indestructible landing gear, no drag-producing wing struts,  perfect box of a fuselage, windscreen with no

compound curves, and quite decent moments allowing the ship to be trimmed for flight with addition of little or no nose ballast.

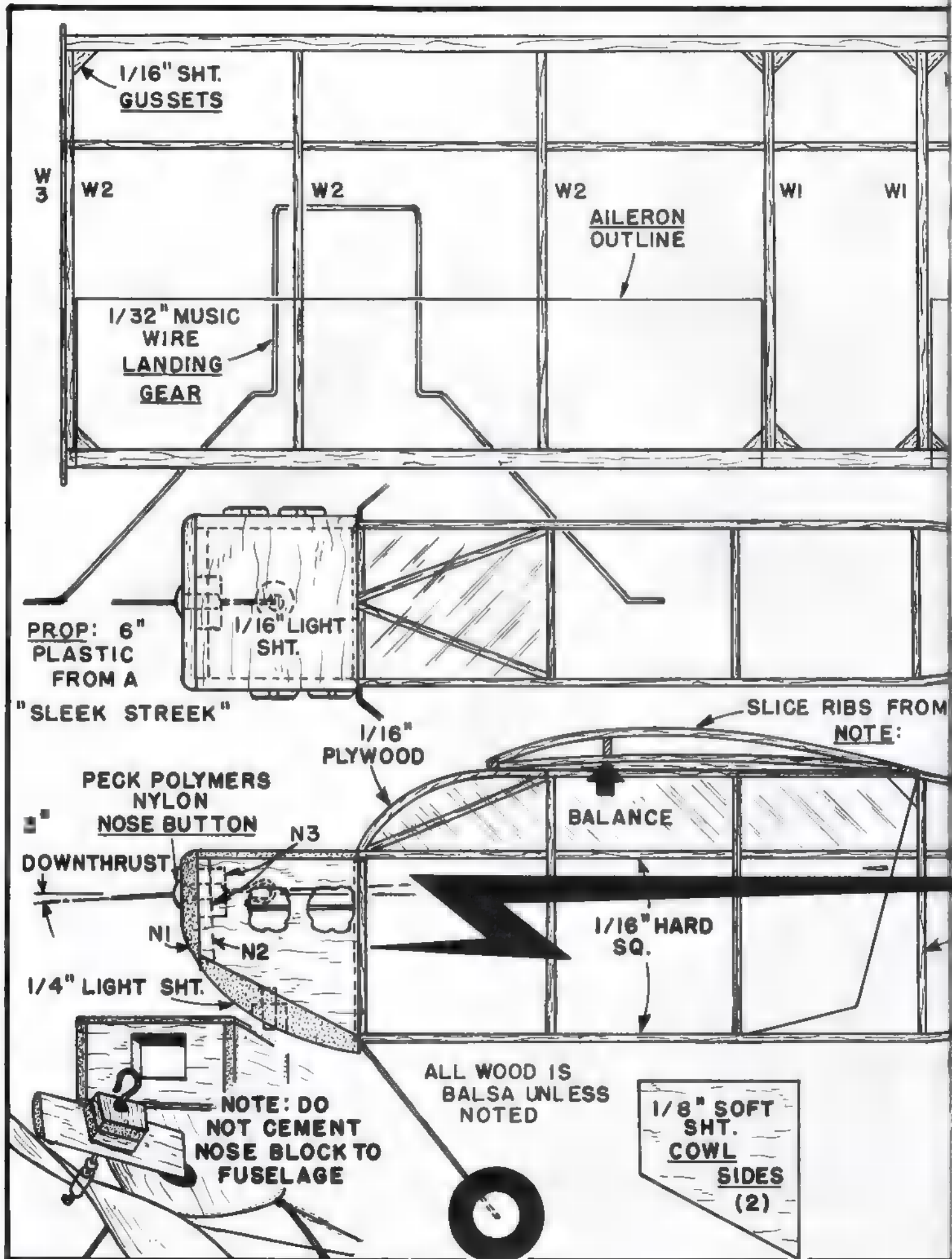
All in all, the Lacey is the perfect ship for the beginner in Peanut Scale. As far as the proof of the pudding goes, the model turned top time indoors under a 15-ft. ceiling at the 1974 Vegas Vultures Peanut Annual at 39 sec. ROG, and has done 2:19 outdoors, with many flights over a minute. The only recommendation as to modifications I would make to builders who will be flying outdoors in winds over 5-10 mph might be to add about 3/4" of dihedral on each side.

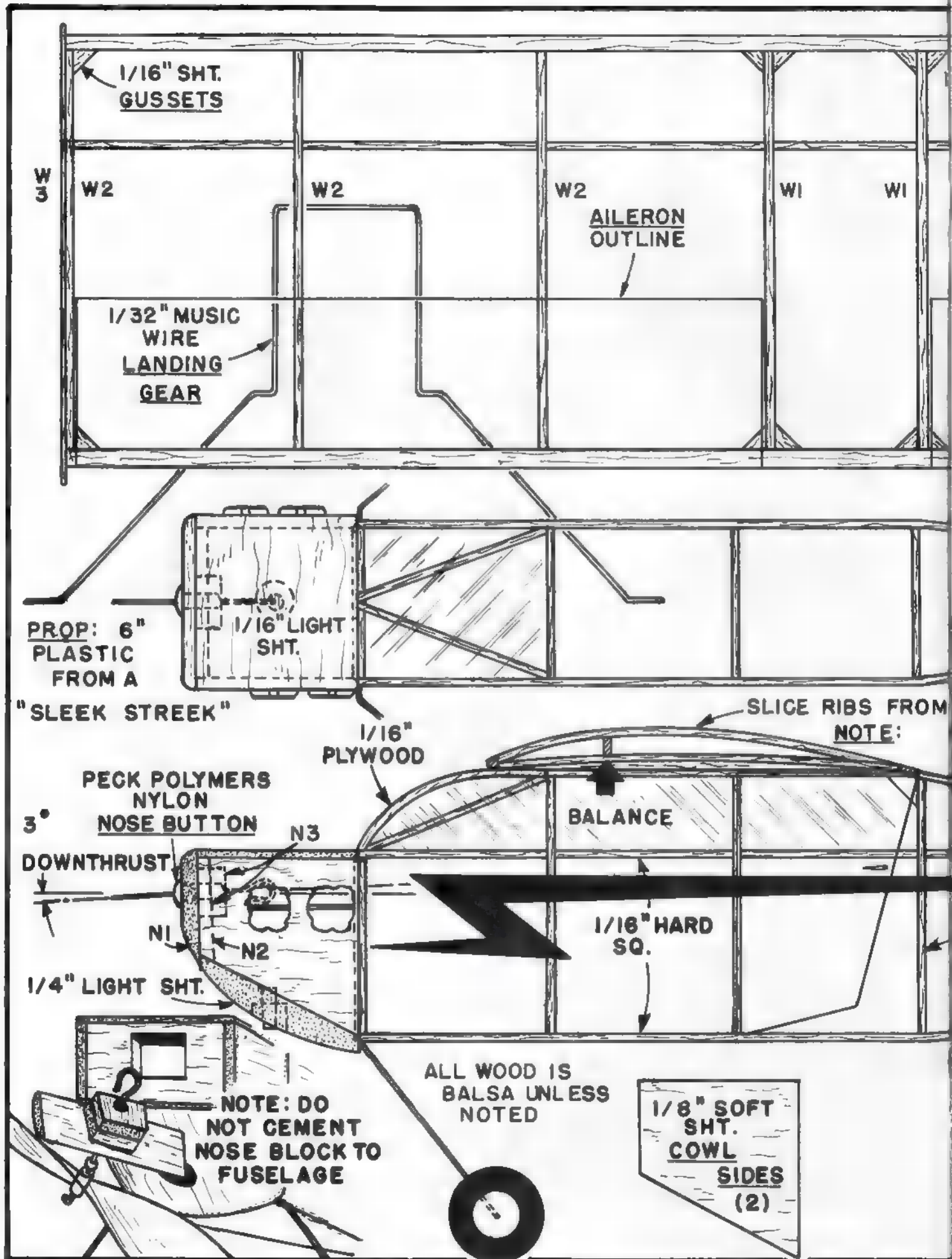


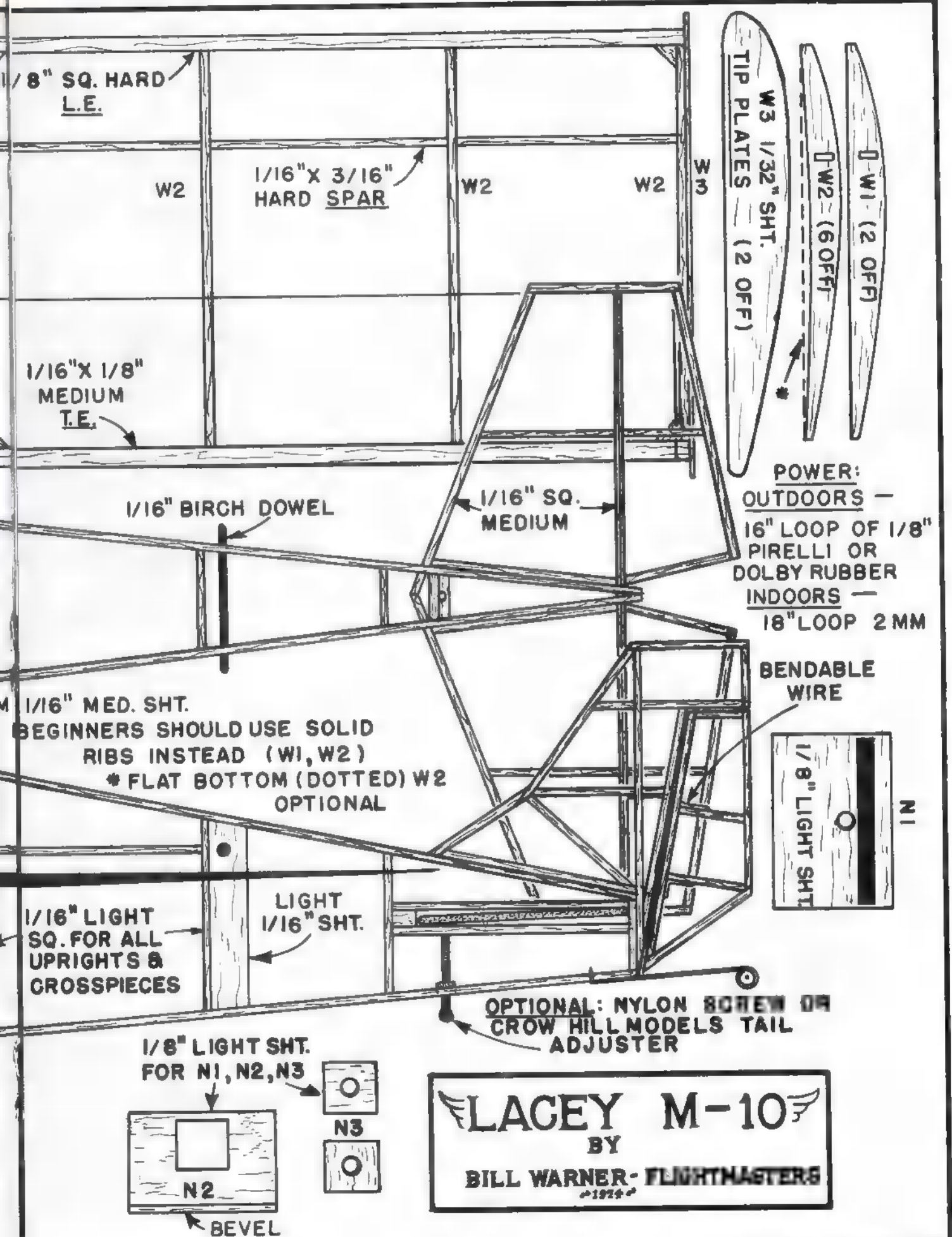
The Lacey's skeleton is buildable from bits and pieces found in the scrap-box. The price...peanuts, of course.



A fuselage like this shows that good Peanuts can be found in boxes.







KWIK BILT* SIG MINNOW 1/4 MIDGET PYLON RACER



DESIGNED BY MIKE GRETZ

FOR 4 CHANNEL RADIOS USING MINIATURE SERVOS

KIT FEATURES:

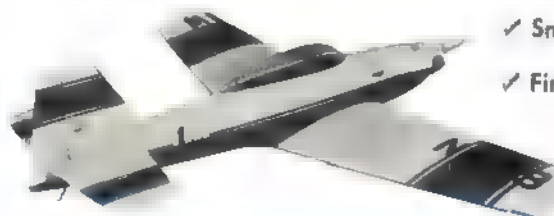
Formed Plastic Fuselage Halves
Rugged Plastic Cowling
Clear Bubble Canopy
Precision-Cut Foam Wing Core
Plastic Sheet Wing Covering
Solid Balsa Internal Profile
Sheet Balsa Tail Surfaces
Step-By-Step Instructions with Isometric Drawings
Pre-Bent Landing Gear

HARDWARE PACK INCLUDES:
Molded Nylon Control Hinges
Molded Nylon Control Horns
Tuf-Steel R/C Links
Double-Coated Servo Mounting Tape
Wire Torque Rods

WING SPAN: 39"
LENGTH: 32"
WING AREA: 310 Sq. In.
FOR .15 Cu. In. ENGINES

SIG
KIT KBRC-3
\$24.95

- ✓ Easy To Build
- ✓ Durable Construction
- ✓ Fast Around The Pylons
- ✓ Smooth Control Response
- ✓ Fine All-Round Sport Flier

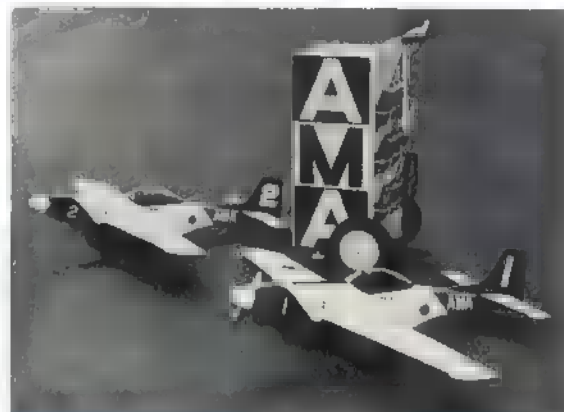


MEETS AMA 1/4 MIDGET SPECIFICATIONS

GET INTO THE A

Sig's Time-Saving, Patented "Kwik-Bilt" System Pioneers Large Construction. The Internal Balsa Profile Carries Surfaces, Protecting The Molded Plastic Fuselage Shell. Ready-Formed Shell Goes On Effortlessly In A Few Minutes. Component, Complete With Panel Lines And Integral Are Sheet Balsa And The Foam Wing Core Is Covered Easy-To-Assemble Structures. The Superb Control Designs Deliver Picture Perfect Maneuvers. A Great

FLOWN IN FORMATION AEROBATIC DEMONSTRATIONS
AT MAJOR AVIATION EVENTS BY THE AMA SHOW TEAM



RC Super Chipmunk



ENGINE: .45-.61
WING SPAN: 64"
WING AREA: 690sq.in.
WEIGHT: 6-3/4lbs.

Designed by M

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THE FUEL STORY:

For many years castor oil has been considered the ideal model engine lubricant. During 1973, castor bean crop failures caused increases of as much as 400% in the market value of castor oil and an inevitable skyrocketing of model engine fuel costs. Current prices for name brand castor oil fuels are running from 11 to 14 dollars per gallon.

Trials of more economical all-synthetic oil formulas showed mixed results. Engines run cleaner and have low varnish and carbon build-up using synthetic lubricants. However, synthetics are less forgiving than castor oil when an engine is run overheated with a carelessly lean needle valve setting.

After extensive testing by Sig fuel consultant Peter Chinn, the world's leading authority on model engines, a practical solution was discovered in a blend of Klotz Chemical Racing Lubricant and Baker's AA Castor Oil. Klotz is the finest synthetic oil available, developed for use under the severe engine environmental stresses of competitive dragster, cycle and boat racing. This blended formula has since been flown at many contests by the Sig Factory Fliers and used by countless thousands of other model builders with uniformly excellent results. We are convinced that this is the best approach to the question since the safety of castor oil under high frictional coefficients has been combined with the clean running qualities of Klotz. The result is long engine life and high performance at economical cost.

For the finest fuel available — at any price — ask your dealer for Sig.

FLY IT! YOU'LL LIKE IT!

AIR FAST WITH A **KWIK BILT*** KIT

Engineered A Revolutionary Method of Fuselage Construction The Load Of The Engine And Flight Shell From Vibration And Fatigue. The Minutes To Produce A Smoothly Finished Wing And Tail Fillets. Tail Surfaces Covered With Balsa Planking, Making These Response Of These Competition Proven Combination Of Looks And Flyability!

The Kwik-Bilt P-51 was selected by the AMA Show Team for their formation stunt act. This performance is a feature of the exciting demonstration put on for spectators at air shows, fly-ins and contests to promote model aviation and the Academy of Model Aeronautics. The Team P-51's are painted red, white and blue with large AMA lettering on the bottoms of the wings.

The colorful field carts carry every item they might need during a show. Each cart weighs 130 lbs. and has a complete power system driven off a 12 volt battery. Two gallons of fuel, two pumps, two glow plug leads, two starters and six transmitters are part of the cargo.

Bob Lopshire, AMA Public Relations Director, says about the Mustang: "The 51's are highly maneuverable, and as a result, the formation act is now far more believable than ever before. Crowd and modeler reaction has been enthusiastic." Jack Salmon, AMA Show Team Manager, adds: "They make us into very good looking models and their flight characteristics are excellent."

The Team will be flying a full schedule of shows with the P-51's during the 1975 season. Be sure and see this spectacular combination of top notch pilots and planes when they appear in your locality.



Designed By Mike Stott

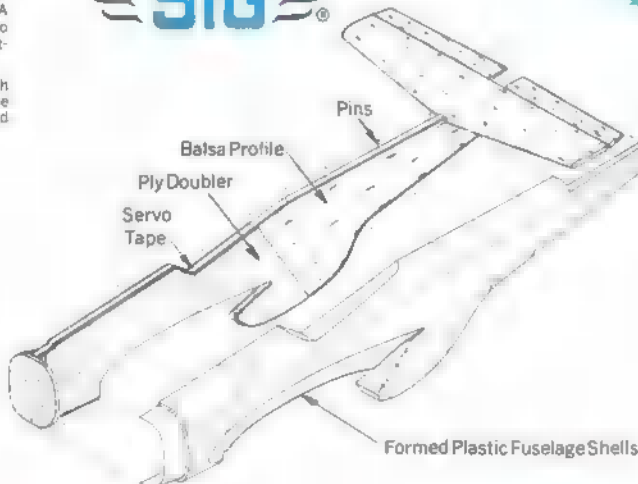
FOR FOUR CHANNEL EQUIPMENT



KIT KBRC-2

\$189.5

ENGINES: .45 - 1/2
WING SPAN 64"
WING AREA 700 Sq. in.
WEIGHT 7 lbs.



Precision-Cut Foam Wing Core
Rugged Plastic Cowling
Clear Canopy With Framing
Formed Plastic Wing Tips
Solid Balsa Internal Profile
Sheet Balsa Tail Surfaces
Pre-Bent Torsion-Bar Landing Gear
Decorative Decal Sheet
Step-By-Step Instructions
SIG Quality Balsa and Plywood
Formed Plastic Fuselage Halves
HARDWARE PACK
Molded Nylon Control Hinges
Molded Nylon Control Horns
Tuf-Steel R/C Links
Double-Coated Servo Tape



KIT KBRC-1

\$449.5

by MIKE STOTT

SUPER-SCALE LOOKS - PATTERN-SHIP PERFORMANCE

*Patent 3699706
Other Patents Pending

SIG HAS THE ANSWER TO THE LUBRICATION PROBLEM A BLEND OF KLOTZ RACING LUBE AND PURE CASTOR OIL



PETER CHINN, writing in the English magazine RADIO CONTROL MODELS AND ELECTRONICS, has this short but valuable advice for wise model engine owners: "Follow recommended running-in procedures and avoid overheating the engine by keeping the needle valve setting on the rich side. Do not run new engines at full throttle for long periods and be prepared to close the throttle immediately if the engine begins to labor."



A tankful of Sig Champion fuel in Hazel Sig's 56" wing span Clipped Wing Cub model (Kit No. RC-26 - \$26.95) of her full scale aerobatic airplane delivers high power output and dependable idle. With built up construction providing a light wing loading and a high, flat bottom wing section adding inherent stability, the Cub is an excellent beginner's choice in scale model flying.

Regular (25% Oil - 5% Nitro)
Pint.....1.50
Quart.....2.50
Gallon.....7.25

Contest (25% Oil - 25% Nitro)
Pint.....1.60
Quart.....2.75
Gallon.....8.50

R-C Special (22.5% Oil - 5% Nitro)
Quart.....2.50
Gallon.....7.25

R-C (25% Oil - 10% Nitro)
Quart.....2.65
Gallon.....7.95

"15" R-C (25% Oil - 15% Nitro)
Gallon.....8.50

C-L Stunt (25% Oil - 5% Nitro)
Pint.....1.50
Quart.....2.50
Gallon.....7.25

Racing (25% Oil - 35% Nitro)
Pint.....1.75
Quart.....2.95
Gallon.....9.50

Flymobile



A heavily stressed, rugged, HD sport plane that is at home on land or water. Its simplicity extends from a solid tail, thanks to a highly modified production fuselage from Fly Team A. With it.

The Flymobile comes out of a desire to create a new type of sport trainer RC model. Experience with sailplanes has demonstrated that wing-mounted motors have fewer broken props—so why not try four wheels to help prevent ground loops? A sketch of this configuration looked a lot like some of the experimental tailless planes that have been made. It was also apparent, from the desire to have an RC plane that could fly in a variety of climates—all year long if you fly in New England. Flymobile is a simple to build, easy to fly model.

CONSTRUCTION

Though the Flymobile is relatively simple, you must have some experience. There are no complex curves to replicate, construction materials are sheet balsa, and there are

no open areas to cover. If you prefer, choose your favorite covering material, but be sure it's watertight if the Flymobile is to be used as a waterplane. Make sure you waterproof the inside of the structure. The fuselage is not thinner to save parts than or epoxy (see page 11) to coat the insides before you put the top covering on the fuselage.

Because of Flymobile's short run, you should minimize weight behind the wing wherever possible. The stabilizer and fin should be very lightweight: balsa with straight grain to resist warping. The fuselage sides should be of similar material. The wing holes that pass in the tail surfaces, if the balsa is large enough. We had to add three oz. of lead in the nose block to make the plane balance at 25% of mean chord.

Wings: Start the wings by cutting out the planform and then sand them. Make sure you prevent any warp free. Alignment is important. Cut the wing side code to a primary dorsal fin on the width of your stock. The ribs show splices for the ribs. Make sure the ribs are evenly spaced. Cut

the dowel holes with the sides lying on top of each other.

Attach the plywood covers to the main frame bottom using the 1/8" x 1/4" doublers that run vertically from the center of the fuselage. Make sure you have a right and a left side.

Mark the bulkhead locations on the front fuselage and sides of both sides. At this point, the assemblies are made, and then joined to form the basic framework for the fuselage. Then build the plywood forward fuselage using or Titebond cement to attach the plywood to the sides. Use the 1/8" x 1/4" triangular ribs at the bottoms of bulkheads B and C to provide extra support (this is not shown on the plan).

Then assemble the sides to the bulkheads D, E, F, and G. This is done upside down over a center line drawn on your work surface. Lay the centerlines of the bulkheads over the centerline on the work surface. Incidentally, cut a piece of 1/8" x 1/4" plywood under the nose part of the fuselage. Space this up from the bulkheads an amount equivalent to the thickness

of the rear top covering. The plywood sub-fin mount may be installed at this time. Be sure that the 2-56 blind nut is installed in this piece (seaplane version only).

After these assemblies are dry, join them at the bottom between bulkheads C and D, and at bulkhead C. Check the alignment carefully and let dry. Dampen the exterior surfaces of the sides and draw them around bulkheads A and B. Cement and allow to dry. Add the rear bottom sheeting.

Dope or epoxy the inside of the fuselage. At this time the inside of the top covering should also be doped or epoxied. Add the Nyrods. These should be epoxied at the point where they leave the fuselage, and may be trimmed flush with the outside of the fuselage after the epoxy is dry. Add the top covering and doublers around the wing opening. This would be a good time to install the rudder and elevator servos. Add the plywood hatch frame in the cabin opening, and build the hatch. The hatch is gasketed with 1/8" sponge rubber that is held on with Pliobond cement (don't add the gasket until the fuselage has been fully doped). The

hatch is held down with 2-56 screws going into blind nuts in the hatch frame. Omit the hatch if you are not going to fly from the water.

Add the nose block and roughly shape it with a razor knife. Sand the entire fuselage. Cover the fuselage with your favorite covering material, then add the landing gear, wing, and stabilizer hold-down dowels.

Tail Surfaces: These are made from 3/16" sheet balsa, spliced as necessary. Fairings between the fin and stabilizer and for the sub-fin are made from triangular balsa strips, which are shaped before they are installed. The dowel in the front of the stabilizer protects it from the rubber bands. It is optional to insert a piece of 3/16" sheet soft pine at the rear of the stabilizer, where the grooves are shown for the rubber bands.

Join the two halves of the elevator by cementing the connecting dowel in place. Pin the elevators and the connecting dowel to a flat surface while the cement is drying. Cover the fin, stabilizer, rudder, and elevator before you add the hinges.

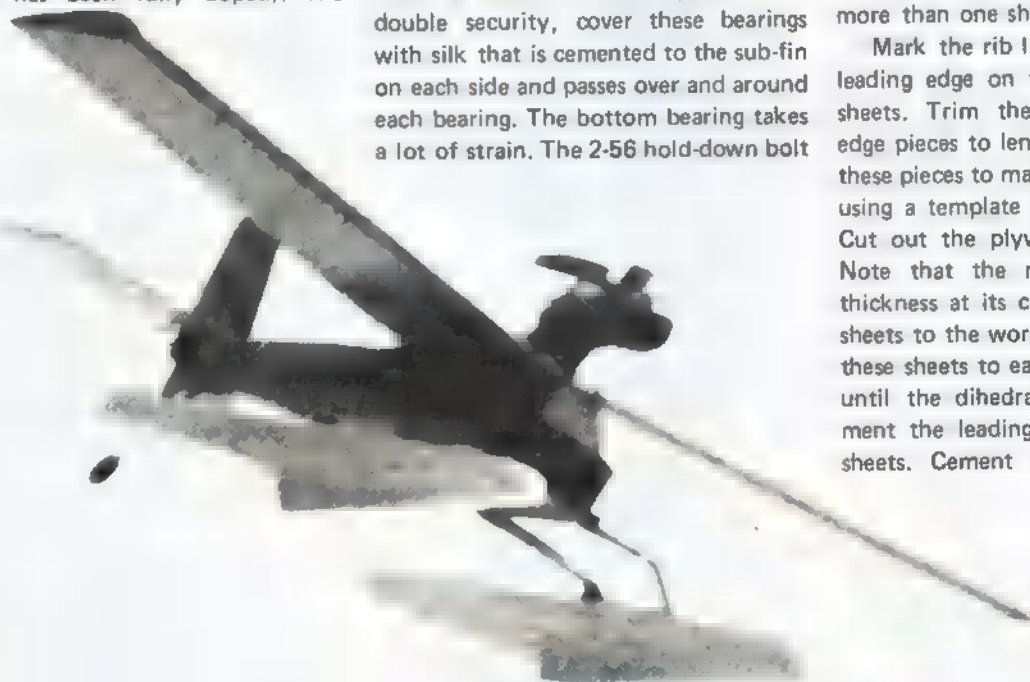
The nylon water rudder bearings are sewn to the sub-fin and epoxied. For double security, cover these bearings with silk that is cemented to the sub-fin on each side and passes over and around each bearing. The bottom bearing takes a lot of strain. The 2-56 hold-down bolt

hole may be made in a piece of 3/16" soft pine or birch dowel that is let into the sub-fin base. The recommended shape of the rudder is the product of a great deal of experimentation, so don't chance it. The water rudder shaft should be long enough to keep the rudder about half in the water, when the model is running on the step of the float.

Motor Pylon: The pylon is made from 1/2 x 3/8" motor mount stock and 1/4" plywood. The fairings are triangular balsa blocks, rounded off for streamlining. We used fir plywood for the pylon itself, and cut some 1" holes in it to make it lighter. Cut the motor bearer stock to length and then cut the 1/4" ply center to the shape shown on the plan. Cement the bearers and center piece together and clamp the assembly in a vise until dry. Preshape the fairing blocks and cement them in place.

Wing: Start construction by making four sheets of 1/16" balsa 25 x 10". The 10" ends of these sheets should be nicely trimmed at right angles. Two 3" and two 2" sheets may be combined to make the 10" width. When you join 2" or 3" sheets lengthwise to make these sheets, stagger the joints—don't join more than one sheet at the same place.

Mark the rib locations and the wing leading edge on two of the 25 x 10" sheets. Trim the leading and trailing edge pieces to length. Slant the ends of these pieces to match the dihedral angle, using a template made from the plans. Cut out the plywood dihedral braces. Note that the main brace is double thickness at its center. Pin the bottom sheets to the work surface. Do not glue these sheets to each other at the center until the dihedral angle is added. Cement the leading edges to the bottom sheets. Cement the outer, full-length



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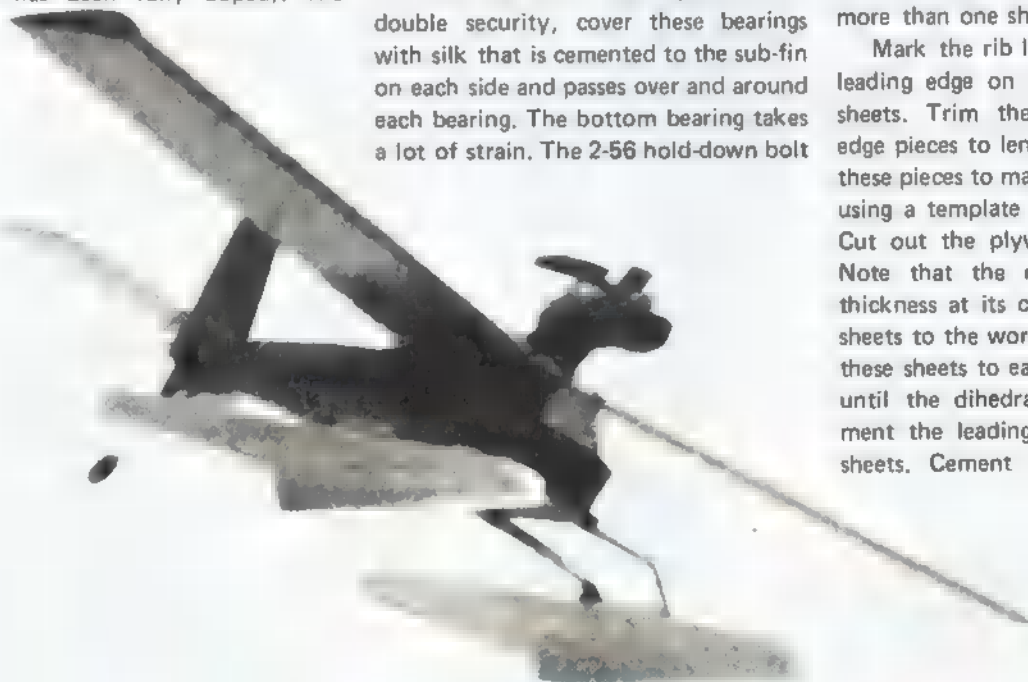
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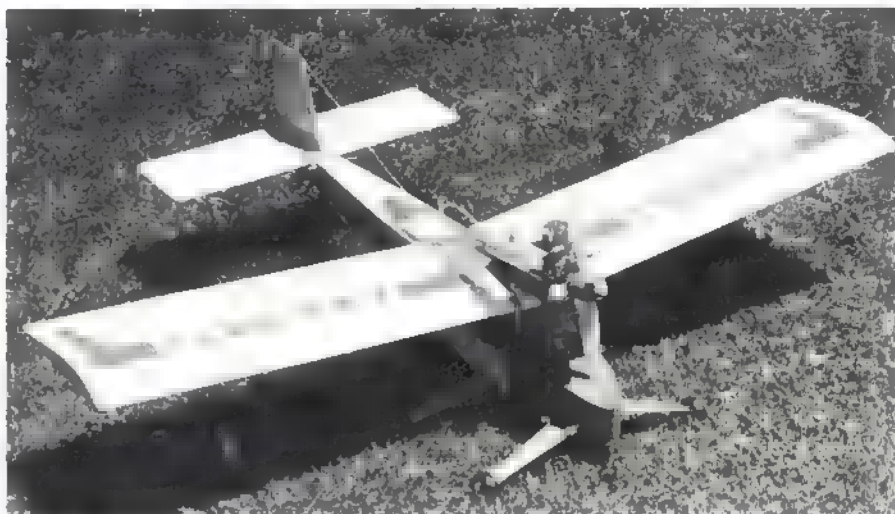
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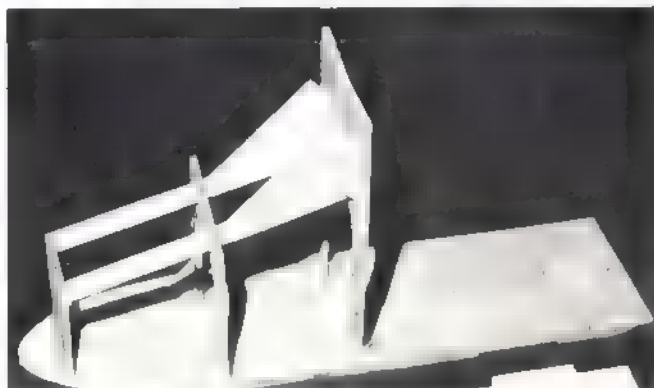
ribs in place. The tip cap ribs will be added later.

Cement the forward dihedral brace in place on one panel. Cement the front sections of the center ribs into this panel, and add the main dihedral brace and its doubler. Slant the center rib to match the dihedral angle. Note that this rib is inset 1/8" to allow for the pylon, which is sandwiched between this rib and the same rib in the opposite wing panel. Cement the rear sections of the center ribs into this panel and add the trailing edge piece.

Fit the pylon to the wing at this time and cement into position. Trim the center ends of the top of the wing and the inside of the top covering. Cement



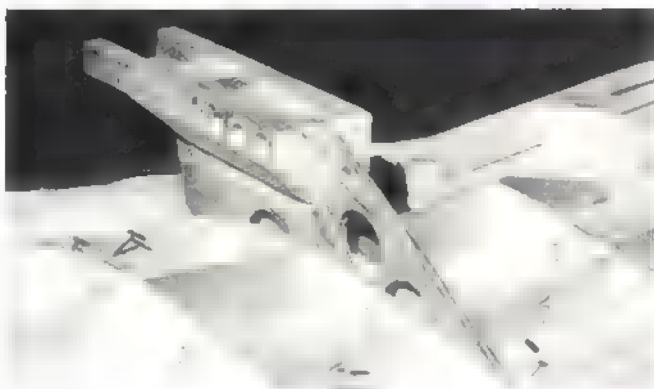
The stubby-nosed Flymobile is a multi-purpose Sunday flyer. The unusual gear configuration solves many of the problems usually related to land/seaplane operation.



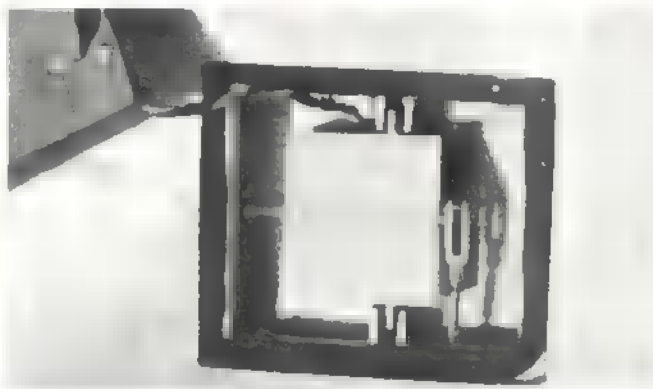
The forward fuselage frame is plywood, for good crash resistance.



Dihedral joints go in one wing panel, before top sheeting.



The plywood and maple engine pylon is glued, as a unit, into the center section of the wing when the dihedral joint is made.



The throttle linkage is in a well cut into the underside of the wing. A foam gasket serves to keep out the water.

the top sheeting onto each panel. Check the dihedral angle and trim until the centers of the panels are a snug fit. When everything is true, join the two wing halves.

Carefully cut out the wing bottom covering in the area between the ribs and spars where the throttle servo is to be mounted. Add a 1/4" square hatch frame around the opening. Install four 2-56 blind nuts in the frames to accommodate hatch hold-down screws. Set the frame in 1/8", to allow for a 1/16"

plywood hatch and a 1/8" gasket compressed to 1/16". The servo is mounted in slots of balsa and cemented in place. No screws are used—a piece of soft foam under and over the servo holds it in place when the hatch cover is in position.

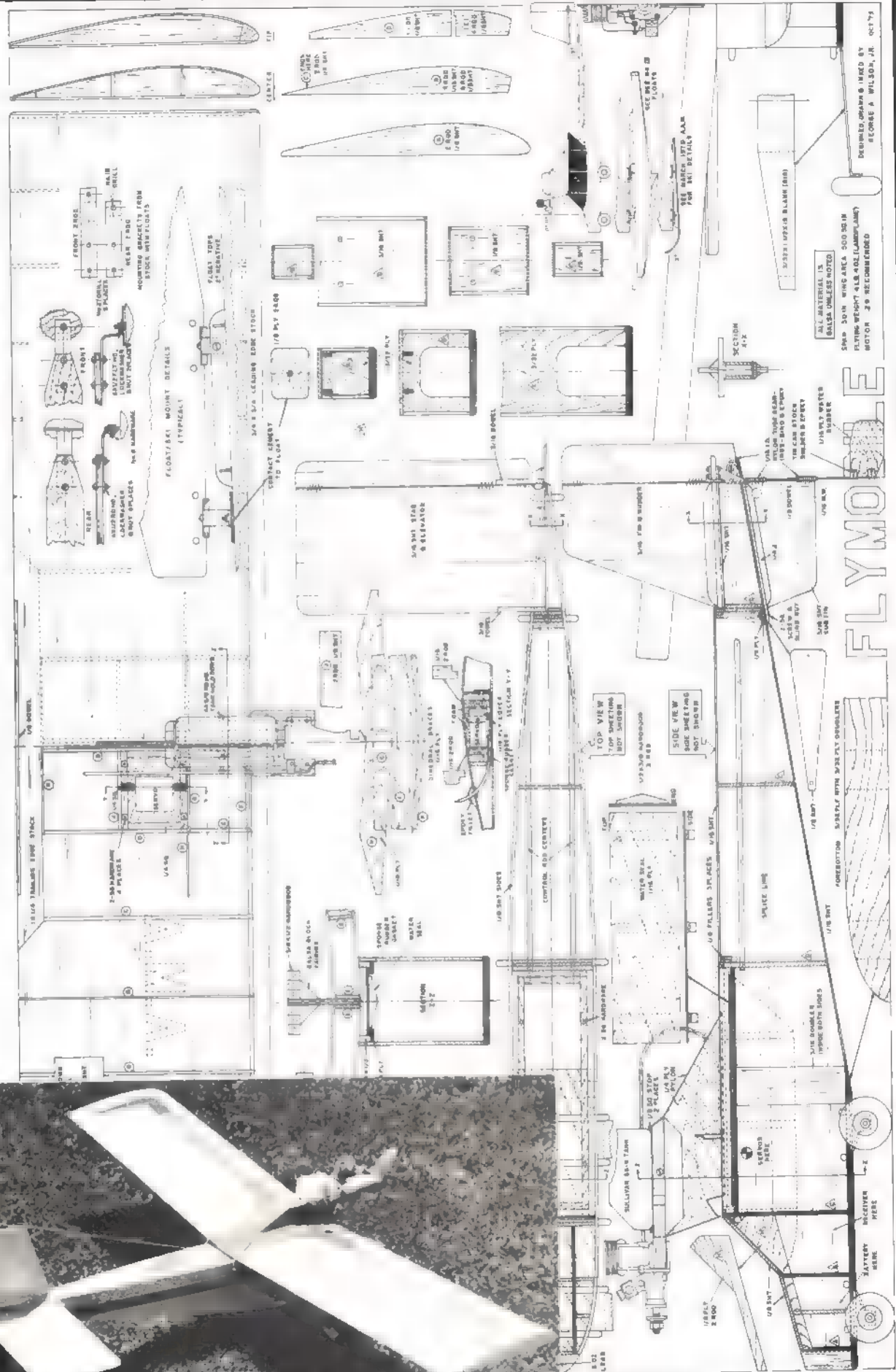
Install a 1/8" square sponge rubber gasket around the hatch opening, using Pliobond cement. Cut an opening in the top surface of the wing. Install the Nyrod cable linkage to the throttle and cement the Nyrod to the wing. We

added some of the "micro-balloon" filler material to the epoxy and shaped a fillet around the tubing. The Nyrod is held at the motor end with two clips bent from shim brass. If these clips are tight, but still allow the tubing to move within them, you have a neat way of adjusting the throttle without playing with the screw that attaches the throttle control arm.

FLYING

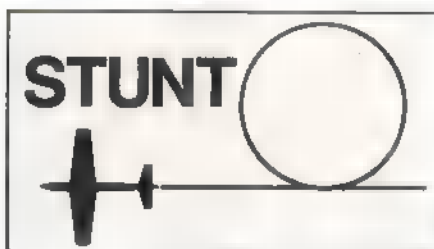
Before you leave for the flying site,

(Continued on page 111)



ALL MATERIAL IS
BASICALLY 4000 PSI
SWAY 30 IN WING AREA 900 SQ IN
FLYING WEIGHT 4 LB 4 OZ (LAMP ONLY)
BOSTON 39 RECOMMENDED
RECORDS A WILSON, JR
OCT 74

where the action is



DON LOWE ON PATTERN

Pattern Judging: Probably the weakest link in competition Pattern flying these days is judging. We have discussed this previously here, and recently described a system—proposed by Jim Grier—which, basically, calls for contestants to judge themselves.

The alternative to this is a program in which judges are trained and certified on the basis of achieving certain carefully considered standards. In many discussions of this problem, the basic philosophy for creating a corps of qualified judges centers around the proposition of (1) organization to create schools or training programs; and (2) incentives to entice modelers to forgo competing, themselves, and be satisfied with judging.

One proposal comes from the South Jersey Radio Control Society. It goes like this:

(1) "The candidates who submit applications to be a judge (to AMA) will be trained in workshops and at flying sites, then tested and screened. Those passing will make up the AMA staff of judges.

(2) "The judges will be paid for their time and travel expenses for contest work.

(3) "The judges for any and all contest work will be 150 miles or more from the contest site.

(4) "While judging, the judges will be spread eight feet apart, so their judgment is not influenced by other judges.

(5) "Funds for cost of this operation should be acquired by adding an additional \$2.00 fee to each AMA membership, which would gross \$100,000. These funds are to be used only for training and payment of judges' time and expenses."

Well, this represents one club's opinion. Obviously much organizational work would be required on the part of AMA, or some group acting for the AMA. The problem of scheduling judges for many Pattern contests also is inherent in this plan. How about the proposition of all AMA members footing the bill for a select competition category? There obviously is no easy solution to the problem. Most competition Pattern fliers will agree, however, that good judging is their contests' most important problem, and that some solution is needed. What do you think? Why not air your views on this subject?

News From Norway: I received a nice letter from Tore Paulsen of Norway. I met Tore at

Doylestown, Pa., when he competed in the World Championships, and he promised to keep me posted on what's happening in his part of the world. His report of the Nordic Championships should be of interest. He writes: "Every year we have a Nordic Championship in Pattern. Denmark, Finland, Sweden and Norway meet for a leisurely contest over a weekend. I say leisurely, because we follow FAI rules, which limit each country to three pilots, making a total of 12. We all stay at the same hotel, usually with wives, making it a social event as well, with Saturday night dinner and everything.

"This year's Championship went off Aug. 30-Sept. 1 at Notodden Airport, 120 miles southwest of Oslo, and was hosted by the Vingtor RC Club. Five rounds were flown,



Tore Paulsen with his Phoenix 5, which he flies off this frozen Norway lake. B-4-r-1

with five judges giving their more-or-less fair scores. The new FAI aerobatic schedule was flown, which caused some delay. The judges could not agree on some points, since the rules written by FAI, with revisions, were, as usual, very much cloudy."

He continues, "With a last-minute briefing for the pilots, the contest got under way. The Swedes had a lot of practice and took the lead from the first round and kept it all through the contest. Only Stephansen (Norway) managed to squeeze in between. The flying was generally very good, with no crashes. Most of the pilots had adopted the American style, with high speeds and fairly large maneuvers.

"All models were originals, except the sole Mach 1 which won the contest. Engines used were Webra Speed front intake, with a special carburetor designed by A. Andreassen (Sweden) and made by H.P. It has 502 mm effective choke area, and the fuel outlet is in the barrel itself, keeping it at the point of highest air velocity in all throttle settings. Idle metering is via a slot in the barrel face. The Webra Speed with this carb, expansion muff-

ler, 11 x 7 3/4 Super M prop, and straight 20-80 fuel turns 13,500 rpm static. Radios used were Pro Line and Kraft."

Sounds like a fun contest, with only 12 contestants. Also, note that they are flying the new FAI Pattern in spite of rumors to the contrary. Now, if I can only lay my hands on one of those carburetors. . .

Wing Loadings and Such: Rumor has it that FAI is considering reducing the allowable wing loading of competition craft. The figure is something like 80% of the present allowance, which is 24.51 oz./sq. ft. of total wing and horizontal tail area. This would be reduced to about 19.6 oz./sq. ft. Such a rule would limit the allowable weight of a Pattern ship, such as the Phoenix 6, to a little over 7 lb. with fuel; a very difficult feat, indeed. In fact, one would have to resort to a built-up structure to meet this weight limit. My present ship's weight is about 3 3/4 lb. with fuel, and it flies very well at that weight. In fact, I wouldn't want it any lighter for windy weather conditions. The landing speed is very comfortable at that weight, and maneuvers are tight. Personally, I can't see any earthly reason for lowering the weight limits. Some even feel that present limits are too low, and should be increased. I agree with that sentiment, since I've flown many heavier, safe aircraft at higher wing loadings than present limits, and they have flown very well.

Now, this might not sound important to you A and B fliers, or sport fliers, but remember—FAI set the standards and, sooner or later, these requirements will be reflected in aircraft designs and kits available to you! I don't want to go back to built-up structures and fixed gear, do you?

Eastern States RC Championships: The 16th annual Central Jersey R/C Club contest was held at Rutgers University, in Piscataway, N.J., this year. Normally, the contest is held at Lakehurst Naval Air Station, but it was moved to Rutgers to attract more spectator attendance. They weren't disappointed, since several thousand people viewed the doings and the *New York Times* devoted a lot of space to reporting the contest—terrific!

To spice the normal competition, two airshows were held between rounds of flying. Airshows included Fran McElwee's flying saucer, helicopters and some scale aircraft. Because of the enthusiasm of Rutgers University and the Kiwanis Club of Piscataway, co-sponsors (take note), the contest will be held there again in '75. Sounds like a good public relations job was done on this contest.

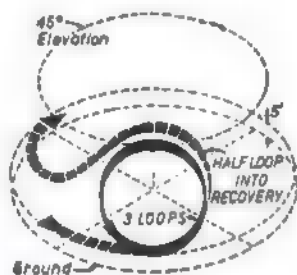
The CD, Leon Shulman, and his assistants, Steve West, Bill Welker (Hi, old buddy!), and cohorts were to be congratulated. As is usual in this contest, but very unusual for most, prizes were awarded to each of the 79 contestants. Prizes totaled approximately \$4,000, plus 62 trophies. How's that for a one-day contest of A, B, D Pattern, Stand-off Scale and AMA Scale?

LEW McFARLAND ON C/L STUNT

Goals for 1975: Now is the time to take stock and ask: What am I going to do with my hobby in 1975? You may be one of the fortunate few who have a simple answer: "Have fun and fly more," or you may have committed yourself to dethroning Bob Gieseke, winning the Nationals, and/or making the FAI Stunt Team. Tentative plans indicate the 1975 NATS will be at Lake Charles, La., Aug. 4-10. It would seem practical to pick the FAI team at this time, also.

The Mid-America Championships are in the works for July 6. Handsome silverplated serving trays have been purchased to offer something different. The stunt circle has now been paved all the way from the center to 73 ft., and the surrounding trees which caused turbulence when the wind blew from the South have been removed.

Maneuver of the Month:



13.4 CONSECUTIVE INSIDE LOOPS (Three Req'd). Correct loops are judged when the model starts from normal level flight and makes a series of three smooth, round loops, all done in the same place with the bottoms

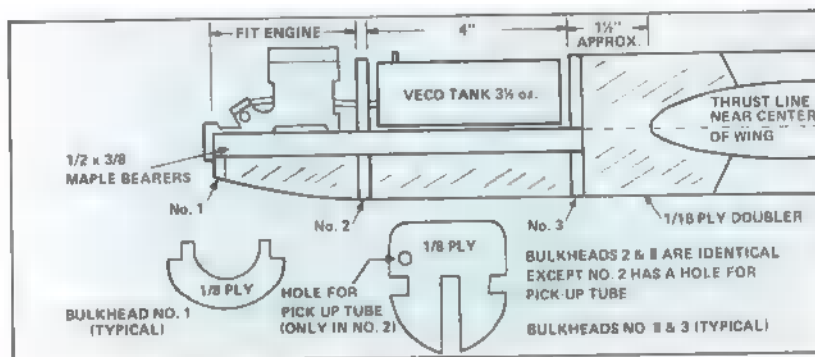
of the loops being at normal level flight altitude and the tops of the loops with the line(s) at 45° elevation. The model then continues for another half loop, recovering inverted and descending to normal flight level, before being judged for Inverted Flight.

Maximum 40 points. Minimum 10 points. Errors: Loops are rough and irregular (i.e., egg-shaped, hexagonal, etc.). Bottoms of loops are not at 4-6 foot height. Tops of loops vary more than 2 feet, plus or minus, of the 45° elevation point. Second and third loops vary more than 1/2 feet from the path of the first loop.

Rather than be repetitious, please refer to the August issue, which presented the Inside Loops. Granted, we are turning in a different direction, but the same principles apply. Remel Cooper has some suggestions on body position which apply to the loops: "(a) Use shoulders as reference points for width; (b) Use arm at 45° angle to ground as reference for tops; (c) Use arm parallel to ground as location of bottoms; (d) In an effort to train for the 0°, 45° and 90° arm positions, it is worthwhile to mark these positions on a wall,

door, etc., and practice holding the arm in the various positions. It also helps to use similar markings for the feet, so that one foot can be placed 180°, 90°, etc. in front of or behind the other.

Transition Profile Airplane for Stunt: The following is extracted from the August, 1974, PAMPA Stunt News and has my "stamp of approval." A superbly built and fiberglassed fuselage was a "vibrating dog" until the engine was mounted upright. I would like to give appropriate credit to John Peck, who built Magicians with upright engines, which were either owned or flown by Randy and Wynn. "After learning Inside Loops, Inverted Flight, and Outside Loops on anything that flies (Ringmaster, Flite Streak, Shoestring, Mongoose, etc.), the next step should be to build a kit profile and change the engine mounting to an upright position. Granted that a Mustunt (an A1 Rabe design published in AAM), or a Rayette (Bob Gialdini) would be



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fine, but I think it would be easier to start with a kit type.

"The advantages of the upright mounted engine are: better run, consistent run, less trouble with vibration, easier starting, and visual similarity to a built-up ship. The kits which I feel lend themselves to alteration are the old faithful Magician, and the Sig Banshee. The Magician is the better of the two, because of its simple, straight fuselage nose which makes it easy to rebuild.

"The Banshee has a fairly thick wing and is good enough moment to do the job. With the Magician, be certain that you don't

engine upright calls for three 1/8" plywood bulkheads, two 1/2" x 3/8" engine bearers, and one piece of 1/16" plywood for a doubler. The drawing on page 11 is not to scale, but gives the general idea.

"The 3 1/2 oz. tank is held on by rubber bands. Use a fuel line filter. Some might prefer to use two 1/16" doublers—it might be a good idea for greater airplane longevity. I personally use fiberglass resin to put all of this together with some cloth, but I'm certain epoxy will work.

"The top line of the engine bearers should be in line with the centerline of the wing, slightly (up to 1/2") above it. This keeps the thrustline near the center of the wing. A Magician should be built with flaps. I've seen them work without the flaps, but not well.

"A Fox 35 will fly this rig well, as will a Max. McCoy's are okay, if you get an en-

gine every five flights. And, of course, the SuperTigre is the best, in my opinion, because you can also use it on a Slow Combat ship. Fox is the most reliable and will give plenty of power. With this setup, and an airplane that is built straight, you can learn not only the Pattern, but you can repair easily." Written by Wynn Paul, with help from Randy Hancock.

I suggest you become a member: PAMPA—(Precision Aerobatics Model Pilots Assn.)—founded July, 1973, at the National Championships. Objectives include: promote communication among stunt fliers, provide a monthly newsletter, establish mail voting issues concerning Stunt, establish a judges' corps throughout the nation, administer the Nationals and FAI events, and encourage and promote Stunt.

On removable wing designs, this configuration of tank vents makes the assembly removable. One vent is to the muffler for pressure, while overflow vent is closed during flight.

sand the spar, because this will weaken it and possibly a wing failure. Otherwise, the wing is great—I had a Magician that flew probably 200 Stunt Patterns, plus exhibitions (with an upright engine), and the plane was very solid when I sold it.

"The Midwest Profile group (Mustang, 109, P-40, Skyraider, P-63) are okay for this conversion but, in both Randy Hancock's and my opinion, not as good as the Magician or Banshee. Randy feels that these do better with a 40 engine or a good Max. They also have fairly deep fuselages, which makes them a bit cumbersome to convert. Mounting the

APPLICATION FOR MEMBERSHIP IN PAMPA

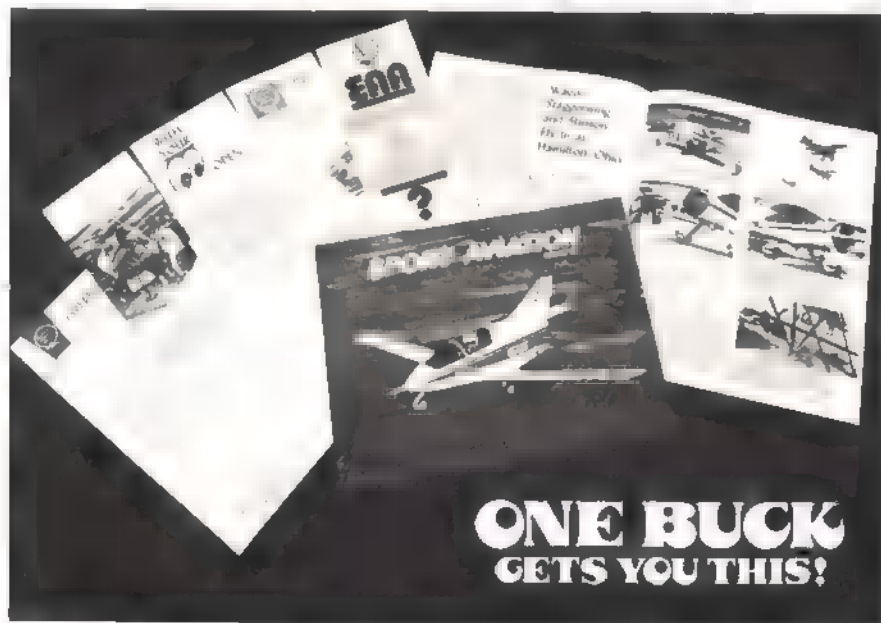
Send check for \$5.00 for dues for one year (good until July 1, 1975). Make check payable to PAMPA. Send to Wynn Paul, 1640 Maywick Dr., Lexington, Ky. 40504. (Tel. 606-277-4645.)

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DURATION

CARL MARONEY ON SOARING

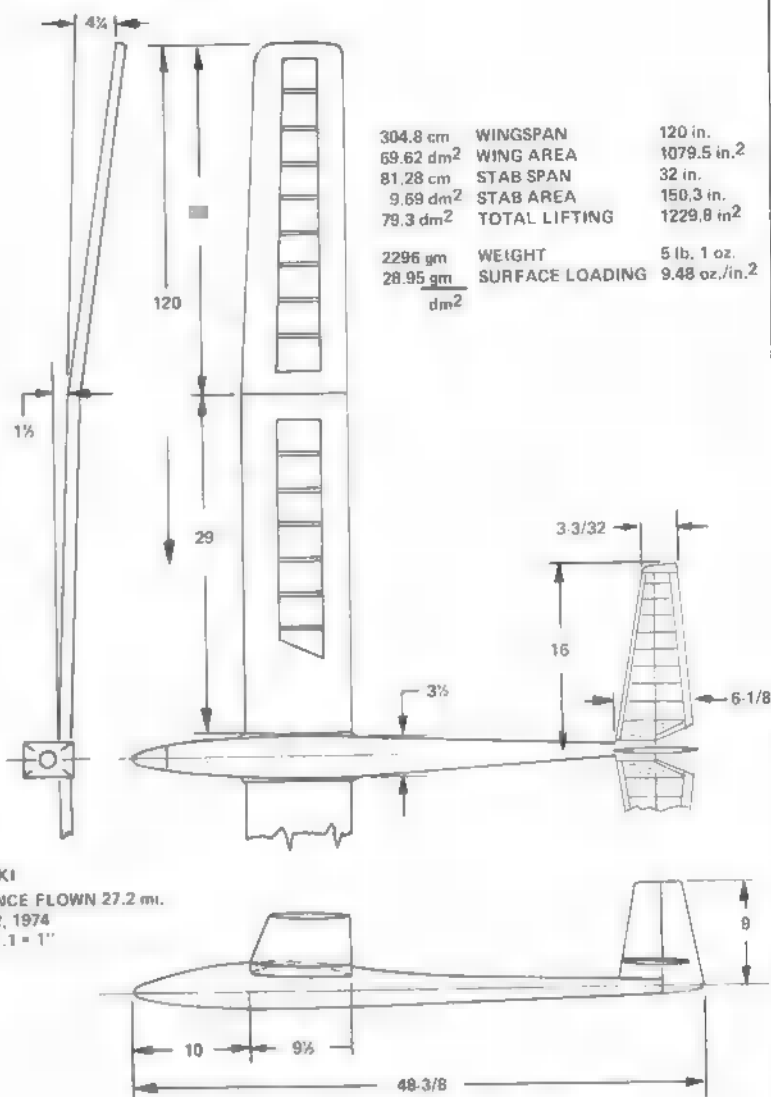
N.S.S. News: While talking to Lee Renaud of Airtronics recently about his limited production kit run of the Super Grand Esprit, he gave me the latest scoop on the outcome of the recent N.S.S. meeting. Newly elected officers are Rodman Smith (President) and Jim Simpson (V.P.). Clive Saddler and Jack Alderson remain as Secretary and Treasurer, respectively.

At the meeting, there were significant revisions to the scale rules, which will be covered in a future column. Also, a definition of Standard Class sailplanes was formulated, classifying them as having a wingspan of 100". No other limitations are imposed, and any number of functions or devices are legal. This is a revision of rules proposal RC 76-9 and has been submitted to AMA for ratification.

The final news (and it's good news for competition sailplaners) is that the '75 S.O.A.R. Nats will be in Chicago again. The benefits of having an independent sailplane championships are significant, in that it will allow a protracted (three-four-day) event, with high entry figures and lots of flying. And, the excellent coordination of the S.O.A.R. Club will ensure a well-run and enjoyable contest. The N.S.S., in a cooperative move toward the AMA's '75 NATS, will pursue coordination of this event and support thereof. Looks like we could have two big sailplane contests in '75.



Recently, we did an AAM Test on the Model Dynamics' Shriek and Gryphon. Here's a Gryphon with an engine on a power pod. That's Bob Reuther doing the flying.



Three-view and data on Jerry Krainock's World Glider Distance Record-holding Pierce 970 modified. Jerry's story appeared in January AAM.

The N.S.S. also took immediate action on laying the groundwork for a '75 Team Selection Program, in preparation for the projected April, '76, South African Sailplane Internats. The Soaring Society will get a proposal together for the AMA's consideration soon.

All in all, the N.S.S. meeting was a phenomenal step toward advancing soaring on all fronts. The benefits of this new organization already becoming apparent.

Winter Sailplaning: The St. Paul-Minneapolis Winter Carnival, the world's largest snow season activity, will feature sailplane demonstrations as part of its Jan. 24-Feb. 2 schedule. In cooperation with the 3M Flying Club, the event shows potential for becoming a full-fledged Winter Sailplane Nats. The AMA is enthusiastic about the idea and, if it results in anything like the 75 sailplanes that showed up in Detroit last year, it could be the answer to what to do with your sailplane in the winter. Full coverage in magazines like *Sports Illustrated* is anticipated.

The information on this event was supplied by Bob Brown, of Hobie Manufacturing, and he said that there will be plenty of Hobie Hawks on hand for the flight demonstrations.

First World Soaring Championship: Appearing this year's CIAM agenda was an offer from the Aero Club of South Africa to host the first World Championship for RC Thermal Soaring, when Soaring achieves the level to qualify for World Championship status. The South African application stipulated it has government approval and unsurpassed soaring conditions. Hospitality would include short visits to major tourist attractions, which is part of an overall program to encourage family participation. The final decision for selecting which offer to accept lies with the CIAM Committee, and is based upon contest facilities, transportation arrangements, accommodations, climate conditions, special added features, and any financial support being provided by the National Aero Club (Host).

Six AMA Rule Changes Proposed: The following briefs cover the six Soaring proposals submitted to AMA for Rule Book changes.

RC-76-9 Sailplane Classifications: Submitted by Robert W. Charron, Lynn, Mass., proposes to provide a "Basic Sailplane" Class specification to promote flying and competition among those who desire a simple sailplane, and/or those with limited resources and facilities. To accomplish this, he

proposes to add a new section, 39.3.a, as follows:

The specifications for the Basic Sailplane Class of model shall be as follows:

(1) Projected wingspan limited to 2540 mm (100") maximum.

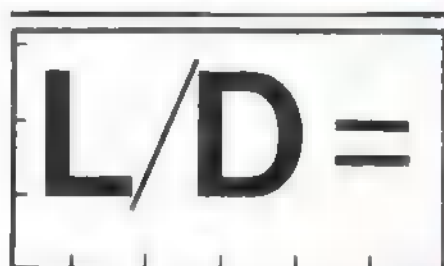
(2) Controls shall be limited to include only rudder and elevator, V-tail configurations included. Disallowed are flaps, flaperons, spoilers, ailerons, drag brakes, drag chutes, etc.; or combinations thereof; or any type of controllable function such as droppable ballast, retractable gear, or controlled release of towhook, etc.

(3) Also prohibited are any types of devices carried by the sailplane to indicate sailplane performance and/or meteorology.

(4) The intent hereunder is to promote maximum competition and not necessarily advance sailplane design beyond this specification. It is incumbent upon the Contest Director to uphold the intent of the Basic Sailplane Class.

RC-76-16 Sailplanes, Proficiency Classes:
Submitted by David L. Harvey, Kent, Wash.,

(Continued on page 84)



DRAG REDUCTION TECHNIQUES FOR MODELERS (Part 1)

ERIC LISTER

This month we'll be planning and laying out the work for a long campaign—the war against the worst enemy airplane performance has... DRAG. If the campaign is successful, you'll be able to understand why drag is bad, how bad it actually is and, most important, how to come to grips with it and win back a few points in performance. You'll never win completely, but, if it's handled right, you'll be able to be satisfied with a negotiated truce between your plane and Old Demon Drag.

There will be a lot of stuff that will sort of border on witchcraft and technical exorcisms to combat this rascal. We'll be digging back into the medieval period in aircraft development between 1905-45. Then, aerodynamicists in the nations that became involved in WWII were designing and testing under conditions that frequently still apply to small, low speed aircraft. These were the days when, in many cases, Reynold's numbers (scale effects) were not fully appreciated, and good engineers thought that small-scale stuff in low velocity wind tunnels could serve as a design base for large, man-rated aircraft.

These were the days when 400 mph was really fast and a 50,000-lb. airplane was a heavy bomber, not a fighter. We'll be probing this period because it was the time when "sorcerers" found ways to overcome the problems of low speed drag. Those old incantations and special shapes were developed for one reason—to overcome subsonic drag. The problems they had then are closely related to the problems of the modeler today. The solutions often still apply.

Not everything that we'll be laying before you in this series is understood in terms of

why it works. However, it has to do is work. If that goes with a conically shaped hat, replete with crescents and stars, and the hat fits, then it works.

For those of you who fly doghouses and orange crates with monster 60s in them, this series won't be of too much help, because Demon Drag has found a home in ships like that. This series will be aimed at the guy who wants to fly longer, further and faster with less or no power.

To explain why drag is bad, let's work with two general categories of aircraft—those with power and those without. Let's take the unpowered variety first, like sailplanes, HLGs, Nordics, and free flight ships after the engine cuts out.

Without getting into force diagrams to prove the point, when a plane is flying without any power, as in the glide, the glide slope

is equal to the lift/drag ratio of the entire airplane. If the ship flies horizontally 20 ft. for each foot it descends, that means it has a lift to drag ratio (L/D) of 20:1.

If drag can be reduced by 20%, this means that the glide slope will increase by 20%. In the example given, the ship now goes 24 ft. horizontally for each foot it descends. Duration also goes up by 20%, because the glide is flatter. Speed in the glide has to do with wing lift and wing loading—not drag—so drag does not affect the cruise speed of the glider. For a powered ship, it's different—this last score, as you'll see below.

In the case of a power ship, if you're flying along nice and steady, with no changes in airspeed or altitude, and drag was suddenly cut by 20%, you'd have two options, rather than one. The first is that, initially, the ship would start picking up speed until it moved

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ing about 10% faster. The second is that you could notice this, and begin to throttle back to hold airspeed and watch the fuel consumption rate drop about 20%. This means that you have the option of using drag reductions on a powered ship in one of two ways, or a combination of both.

Note that, for improvements in endurance time and range, drag reductions pay off on a one-to-one basis—range and endurance time increase by 1% for each 1% drag coefficient reduction. The speed payoff is about half—1% more speed takes a 2% reduction in drag coefficient. The reason for this is that drag varies with the square of speed. If the L/D ratio has been improved, but you use it to go faster, the increase in speed, itself, tends to eat up the improvements you worked out.

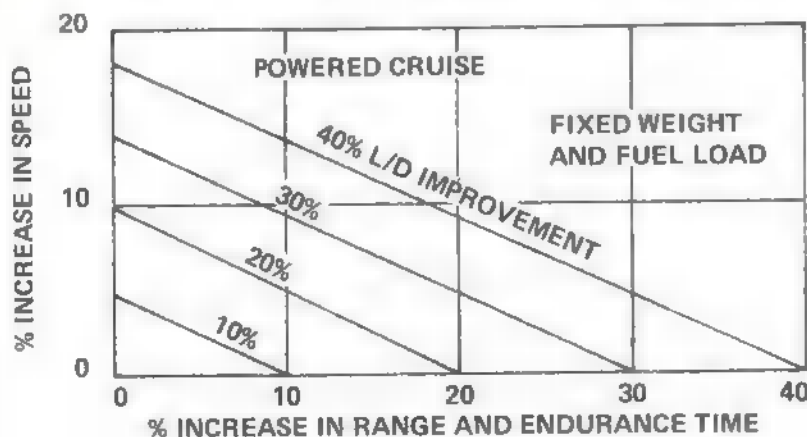
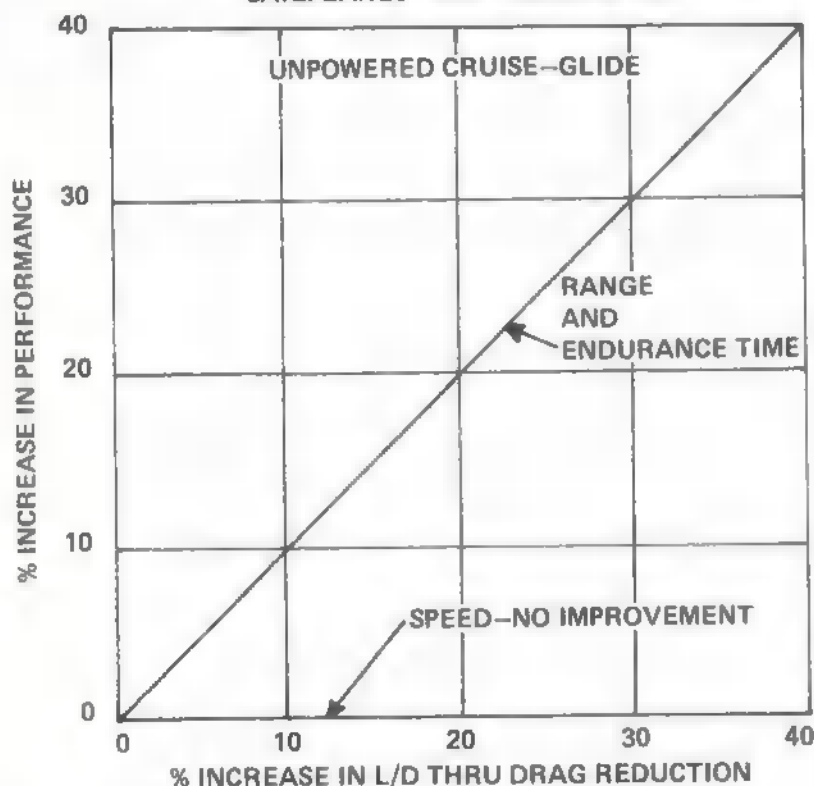
To give you some idea of the payoffs available if you can reduce drag—the two general types of airplanes discussed, refer to the curves. The two biggies in performance for an unpowered ship—range and time—are both

shown as one-for-one benefits due to drag reductions.

For the powered ship, range and time are again presented as one-for-one improvements with drag cutters. Speed for the powered ship is about half the payoff. Note, also, that, for a powered ship, a fixed improvement in the L/D ratio can be traded off for either speed or range/endurance in any combination you like. A 20% L/D improvement, for example, can be spent for a 20% improvement in range/time with ■ speed increase; ■ 10% increase in range/time with a 5% speed increase; or a 10% increase in speed with no range/time gain. Play it any way you want.

Next month, we'll get into the different ways ■ pick up drag, some drag accounting methods, and how important different parts of the airplane are in terms of drag contributions. After that, when the groundwork has been laid, we'll get into what can be done to reduce drag and put the wooden stake back into Dracula's heart.

**PAYOFF CURVES FOR DRAG REDUCTIONS
"SAILPLANES" AND POWER SHIPS**



BOB STOCKWELL ON RC

Since this will be my last regular column, I hope I may be forgiven some expression of regret and some casual wandering down memory lane.

But first, why am I quitting? My relations with the Editor and with the Publisher of **AAM** have been quite cordial. It has been ■ pleasure to work for them and with them. Under the reorganization of recent months, the magazine has shown consistent and impressive improvement in its already high quality. I could not ask for finer support and cooperation than I have received during my almost four years of writing for **AAM**, nor could I possibly feel that either my own work, or pylon coverage in general, has been in any way slighted by **AAM**. On the contrary, the coverage has been generous to a fault.

So, whatever my reasons, they do not include unhappiness with this magazine, which I like and will continue to support both ■ a subscriber and as an occasional contributor.

But two years ago my pylon team started breaking up. During our five most active years, beginning late in 1967, after the NATS ■ Los Alamitos, my pilot was a 13-year-old, then ■ 14-year-old, right up through 17-year-old who lived here at home and spent his spare time in our garage getting ready for the next race.

His first two airplanes in Formula I were fiberglass versions of Joe Foster's Rivets, the plane that won at Los Alamitos the previous year. It was not a good airplane (except for Joe's, I never saw a Rivets that was worth building), and we changed to the Stafford Minnow. I don't know exactly how many of them we built, but I can count 15 for sure, and I suspect a couple of others have slipped my memory.

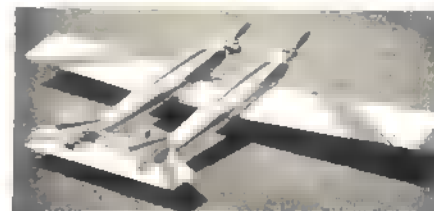
We built them every way: balsa sheeting, as in the kit; then 1/64" hardwood sheeting; then back to balsa, but thicker (3/32") as the speeds came to require greater strength; lengthened nose to get down to 2" spinner; wire gear and dural aluminum gear; at least 10 different ways of attaching wheel pants; three or four different techniques for making lightweight fillets—you name it, and I expect I can say we tried it out, anything that might take off an ounce or two, or that might clean it up to gain another second or two in a heat.

We deserted the Minnow ■ couple of times, always to our regret. We built a DeKnight Special for the memorable 1970 Las Vegas Air Races, and ■ Ole Tiger for the 1970 NATS. Those were both bad mistakes. And, like almost everyone else in recent years, we have built a couple of Miss DARA's after watching the great success Bob Smith has had with it. Though it is a beautiful kit, the DARA has not worked well for us. Now we're back to the Cosmic Wind—the version kitted so well by Terry Prather under the name "Little Toni." Somewhere along the way, we

When that engine went over the hill, we never managed to get a really hot K&B again during that year or during his second college



year. So, at the end of that second year, with schoolwork accumulating, ■■■ had to miss the early season races. Wanting ■■■ ■■■ the NMPRA Championships in Miami, ■■■ spent the first part of the ■■■■■ building a Little Toni and learning to run a beautiful ST X-40 that we bought from Terry, in order to try ■■■ place in the top 10 at the NATS and thereby qualify for Miami. We made the top 10: good thing, because ■■■ didn't get to any more ■■■■■ after school started.

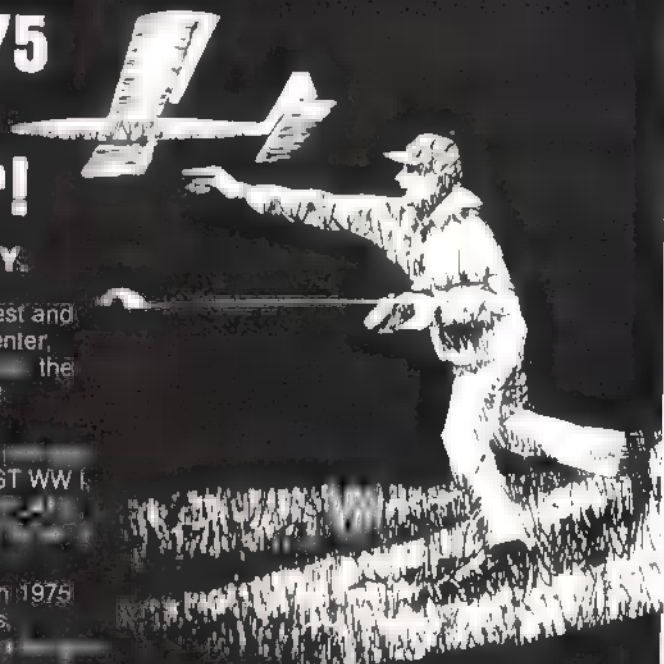


Now, notice what that meant: Whit wasn't racing, and I was getting out of touch. It's not right to keep doing a column when you're out of touch. To keep in touch, I'd have to do something that ■■■ not my thing at all: Go and stand around at the hobby shops ■ at the field—and pick up the goings-on strictly ■ an outsider, ■ nonparticipant. Better to get out while I'm ahead.

So let me say a word or two about why racing has been a joy to me, and why I've tried for six years (two on the newsletter for NMRA) to publicize the sport and (to as much of the world as would listen) to do what I could to make names like Bob Smith and Terry Prather

(Continued on page 84)

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SMITH ON C/L SPEED

More "Funny Lines": In the past few weeks, there has been much talk, argument, hard feelings, and letter writing regarding the use, non-use, or possible ban on groupers. (See January, 1975, AAM for more details.) Being a member of the Speed Advisory Committee, I have received numerous letters on the subject. The letter reprinted here, from Cliff Norman, an FAI flier and long-time speed competitor, gives a good picture of the pros and cons of coupled lines. Read it, think about it, and make up your own mind.

"I'd like to add my two cents to the 'funny line' bit. Luckily, I've been fortunate enough to work for the same company as does one of the FAI Speed Team members, Bob Hemingway.

"In October, '73, we discussed the rumors about the Italians gaining 20 mph by soldering small brass clips to their lines every many inches. These clips, being permanently attached to one line, allow the other line to move freely while kept close and parallel to the other.

"With the weather in February, '74, too cold for flying, and everyone reworking their engines, the line rework idea was left in the discussion stage. Schuette and Spahr, (both members of the FAI '74 Speed Team, along with Hemingway) had figured out a tape and tubing system. Hemingway perfected this technique and passed it on to me and Senior FAI flier Charles Lieber, who used them at the '74 NATS.

"I held off making a set until I meet in New York last September. I knew that Carl Dodge, Hemingway and Lieber would be there, and they all had funny lines. If I



The highest placed American (third) in Czechoslovakian World Championships was Chuck Schuette. One of his most precious pieces of equipment is in his hand—a set of tape/tube funny lines. (Photo by Peter Richardson)

wanted to be competitive, I had to make up a set of funny lines. I made up a set half-heartedly (only 25 ft. of the lines were 'funnyed up'—at least 35 ft. are normally reworked.) Even so, I broke the FAI American record at

158 mph, which was broken that same day by Hemingway at 161 mph and by Dodge at 164 mph. I went from 140 to 158 mph by changing to funny lines. With my new FAI ship and a proper set of funny lines, I expect to reach that 170 mark.

"I would like to see the funny lines banned. Bob Hemingway and Carl Dodge also expressed a desire to see them banned.

Cliff continues: "Control line Speed is an exceptionally hard profession. I call it a profession, since I defy anyone to call it a hobby anymore. Not only is it a profession, but a dying one at that—a monster kept alive and loved by a few of us diehard fanatics. It always was an exciting event whose large following grew smaller and smaller as the event itself grew harder and harder.

"None of us heeded the warning signs when modelers quit, saying monoline was making speed too tough for them; we just called them quitters, and cared less. I cannot see how making an already difficult event even harder can help the event stay alive, let alone attract newcomers.

"I've seen Dodge go from 160, down to 140 mph, because he picked up his handle improperly. The 'up' and 'down' was correct, but the lines twisted 45° and the grouper tabs got misaligned, causing too much drag."

I hope those of you who have taken the time to read this part of Cliff's letter have given serious thought to his comments. With 8-12 hours needed to construct these lines and up to half an hour to reel them up, one must question their potential for bettering speeds, or the event itself. Funny lines are finicky that no one has yet explained how they go about wiping them off. It all

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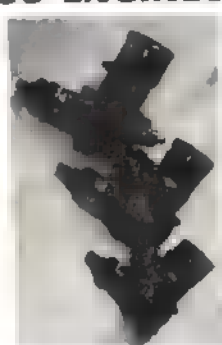
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adds up to nothing but problems. Can you imagine making up a set of .008" wires for 1/2A Proto? Since they are still "legal," Speed Records are being set that will require funny lines to break.

For example, the 1/2A Jr. Profile Proto record is now over 91 mph (a 11 mph jump over the old record). How many fathers are going to make up these lines for their kids? I'll bet not too many.

So what do we have? A couple of hotshots using these lines clean up, and the rest run for fourth place. Even with the wires, the fast guys who are winning now will still be winning,



"CAN'T KEEP UP WITH HIS FUNNY LINES"

but with much less competition, because of the drop-outs who will not enter this silly "line hop-up" contest. Funny lines will only drive one nail in the Speed coffin... and there just aren't too many more empty nail holes.

By this time, the CLCB will have made their initial vote on the rules proposals for '76-'77. If you feel things just aren't what you'd like to see in the Rule Book, send in a cross proposal and voice your opinion. YOU control the voice of your CB member. Without your vote, he cannot represent you to the fullest extent.



CLAUDE McCULLOUGH ON RC

Gear Up, Score Down: Comments about Sport Scale rules in my November AAM Nationals coverage rattled some cages and heated up the mailbox. Dan Santich, whose P-47 placed second, fired in a report on his scoring experiences at Lake Charles. The Jug had main gear retracts, complete with wheel well cover doors, and a retracting tail wheel with cover doors. For this array of operations, scores as low as 6 were awarded by the judges in the first round of flying. Dan was so chagrined that he eliminated the retract option from his flight plan and substituted touch and go, subsequently receiving scores as high as 10 for this maneuver.

His reaction? "So why bother with retracts? A cleaner-flying airplane seems to be the only advantage, but it's a big one!" It also must surely have had influence on his realism in flight scoring, which would have suffered considerably if he had flown the whole pattern with his gear down.

Advocates of automatic scores for retraction may see this as confirmation of their views. My opinion is that the story serves as a commentary on how widely even expert judges' outlooks vary. The same type of thing happened in scoring; in fact, worse. Would you believe one judge awarding a 7 and another a zero for the same maneuver?

Dan didn't mention whether his gear featured any kind of scale-type movement, but my recollection is that it was fairly snap retraction. This could very well have influenced the judging, since other fliers had slowed-down, leg-lagging operation.

Exceptions Prove The Rule (?): No sooner had I stated that a P-51 model should get zonked for an unretracted tail wheel, than Fred Komlosy pointed out, in the *Palm Beach*

Force Mustangs at the Oshkosh EAA '74 Fly-in had fixed tail wheels that did not retract in flight. At this affair, Bob Hoover confounded critics who say that it is unrealistic for a retract gear-equipped airplane to do

gear-down stunts, by daily looping and rolling demonstrations.

So maybe Santich's inverted pass with his gear down at the NATS wasn't wrong after all—it has surely been done many times by full-size Thunderbolts. Still, this whole bit could get rapidly out of hand. I tend to side with Roy Weber who, when asked if a Ford Tri-Motor could be looped for points, said, "Sure. Just as long as it has the markings of one that did and you can prove it."

If you want to stunt a Piper Arrow, it probably won't be too difficult to get a letter from some pilot who did it—if you promise to show it only to the judges and not the FAA. Bruno Klupp, of the German Scale Team, tried an Arrow stunting ploy at the Aer-



ABOVE: Platt's FW-190 has a leg-lagging, gear retraction cycle. BELOW: At the NATS, Santich's P-47 did an inverted pass, gear down, evidently to slow it down for the fly-by.



Olympics, only to be told by FAI Jury member Dr. Helmut Ziegler that he had personally read the aerobatic prohibition placard on the Arrow's instrument panel. Bruno's tongue-in-cheek reply was that this only applied while the airframe was new, a view that didn't get him very far!

Rules Report: The staggering 47 or so individual proposals to the AMA Scale Contest Board for changes in the Sport Scale rules re-



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Bud Atkinson, who placed sixth in Sport Scale at Lake Charles, has proposed to the AMA that the event be made official.

cently were considered in depth by the Florida Scalemasters. Dave Platt reports that they feel the proposals boil down to one of these classifications: (a) ludicrous; (b) reasonable, but debatable; (c) logical changes for the betterment of the event.

Since there are so many proposals, they started by drawing up a list of criteria for examining the changes:

(1) Is it necessary? (Quite a few fell down by failing to meet this test.)

(2) Will it directly or indirectly restrict one's choice of subject? (If so, an automatic NO was given to the proposal.)

(3) Is it meant to serve one type of contestant to the detriment of others? (Changes to help one type of contestant without hurting another passed okay.)

(4) Does the proposal complicate the rules? (Many did.)

(5) Can it be administered? (Many couldn't satisfy this one either.)

These are pretty sensible approaches, and should be taken to heart by ■■■ of our change-the-rules-so-we-can-win types, and one-track-mind, single-style-prototype fans, who blind themselves ■■■ everything except their own narrow interest.

Among proposals favored by the Scalemasters: Drop original design bonus points. Make retract gear a single rather than double option. Increase engine limits to 1.25 cu. in.—same ■■■ AMA Scale now. Limit size of scale presentation.

They were firmly opposed to requiring mufflers on a national basis and vetoed suggestions to change the flight/static scoring to a 1½ to 1 ratio. On this last point, Dave said, "Proposals for changing the points ratio evidently come from has-been or never-were pattern fliers who want to get into our event, but on their own terms. Apparently, building ■■■ decent model is a problem to them. Let them learn. The present 1 to 1 ratio is ■■■ balanced scale. Let's not upset it."

I couldn't agree more on the matter of the 1 to 1 ratio. If basically flying-oriented modelers want to compete in ■■■ event that doesn't put much emphasis on scale points, they will soon have Jerry Nelson's stunt biplane setup, which also has no Builder-of-the-Model rule. Sport Scale is a Scale event, not ■■■ Pattern competition and, since it will soon be the predominant one, we need to keep it ■■■ a reasonable and logical 50-50 level.

Dave, again: "We also were opposed to all of the other kinds of proposals which failed to meet our criteria in one respect or another. Some were just plain dumb."

The Chicago Scalemasters also have registered opinions on the rules by publishing the complete listing of Scale Contest Board proposals in their newsletter, along with ballots to be sent to their district representative and to the SCB Chairman. Get your two cents worth into this discussion; don't wait until the ballgame is over.

Karlsson's Kanopy Kink: Several columns back ■■■ presented Keith Ward's method of reproducing framing on a canopy by vacuum forming. Bob Karlsson has another way of doing this important job that gives realistic results. First, he masks off all clear areas of the canopy, both inside and out, with three layers of masking tape. This amount is necessary to give the desired edge effect. Now drill a series of 1/16" holes through the plastic in the untaped areas where the framing will be. Spread Sig Epoxolite putty to fill the untaped areas. When the putty sets up, sand, fill and paint it. Remove the three layers of tape, and

(Continued on page 84)

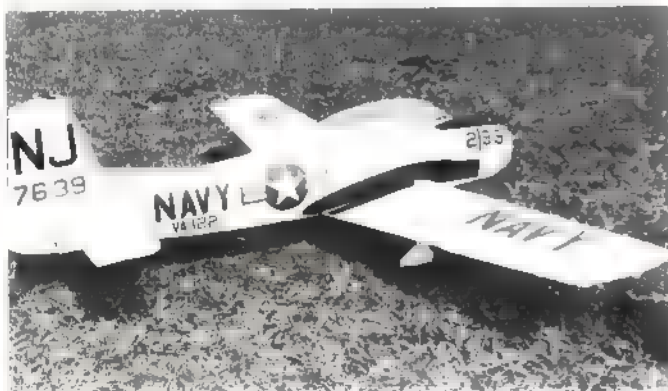


Karlsson's Corsair canopy shows his neat Epoxolite fillet method.

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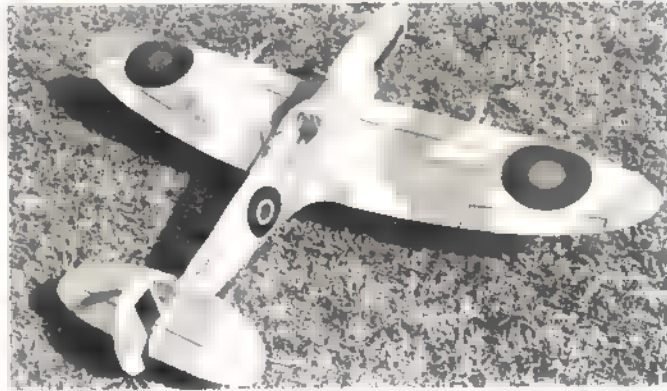
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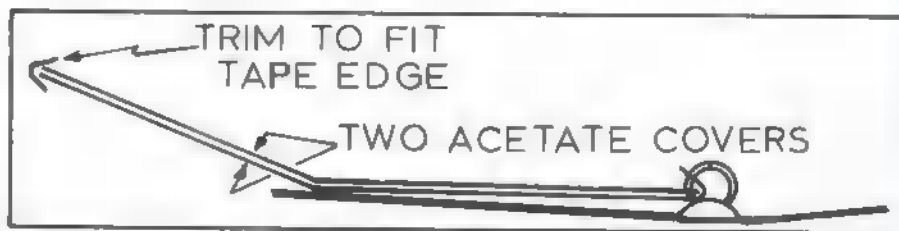
BILL BOSS ON CL

Fillets: Because of the many curves and shapes, making wing fillets can be difficult. While many portions of the fillets can be carved from balsa blocks, or formed by wetting and bending sheet balsa, the area at the wing's leading edge can pose some problems. Here is a method that will permit you to make these fillets with a high degree of accuracy. Materials required are 1/32" plywood (or wood veneering), Epoxolite, glue, black plastic electrical tape, graph paper, and the three-views of the plane you're modeling.

The first step is to make paper patterns of the top and side views of the fillet desired. Draw the patterns to the appropriate scale on graph paper, using the outlines shown on the three-views. When patterns are complete, use the side view to trace the fillet height on the fuselage, and the top view pattern to trace the fillet base on the 1/32" plywood. Be sure that the plywood base includes that portion of the fillet that wraps around the wing leading edge.

The plywood base is now wet and bent around the wing's leading edge. When the plywood holds its new curved shape, apply a coat of white glue and secure in place. Make several 1/32" plywood ribs to appropriate size and proper contour and glue in place. You now have constructed a base with the right outline and contours for completion of the fillet.

Next, place black plastic electrical tape along the edge of the plywood base and the height line drawn on the fuselage. After the tape is in place mix a batch of Epoxolite and apply to the fillet base. The tape prevents the Epoxolite from being spread on the fuselage



and wing surfaces.

When the Epoxolite has become firm, but not completely set, remove the tape and touch up the fillet as required. When the Epoxolite hardens completely (allow to sit 24 hours is a good rule), the final sanding can be done. Note: If you have not used Epoxolite before, be sure to follow instructions for the mixing, shaping and working time.

A major advantage of using this method is that you can achieve an easy blend of the contours. Exercise a little patience and care, and your fillets will look fine.

Plans Wanted: Received a letter from Lawrence McCarthy, 4 Oxbow Rd., Natick, Mass. 01760, requesting data on the DC-2, predecessor to the DC-3. He is looking for three-views, and/or construction-type drawings that show the fuselage formers and wing rib layout. Lawrence would like anyone with this data to contact him.

Chicago Scalemasters' Tech Tips: Bill Naylor informs us that your local dress shop is the place to find a substitute for standard flying wire used on many of the old biplanes. Bill says a package of Scovill Dritz silver metallic thread, No. 616, 30 yards, will provide a lifetime of realistic flying wire material. Cost of

the thread is about \$.35.

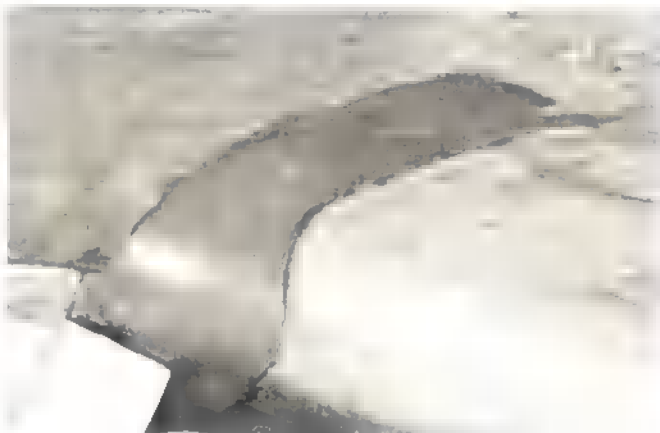
Clark MaComber, who says a Scalemaster never lets a good idea go unstolen, reports on a Scale Presentation idea he saw while judging at a CL Scale event in Battle Creek, Mich. Many scale modelers use acetate covers to protect their written or photographic material in presentations. However, the covers limit the material to be protected to standard 8 1/2 x 11" magazine or letter size. What do you do with a double page three-view, or the color foldouts we often see in AAM?

Well, you take two covers, open them out, slip one inside the other. Leave one end intact for insertion in a looseleaf binder, cut the opposite end to size and tape ends together with Scotch Magic mending tape. You can use the black backing sheets as stiffeners or make new, larger ones of some other material.

Foil Covering: Michael Galinski, Montreal, suggests the use of epoxy paint for adhering aluminum foil when metal-covering models. Mike indicates he has tried various glues and contact-type cements, but has had trouble obtaining a completely smooth, finished surface. It seems that either small lumps showed up after covering, or the foil peeled off after contact with the fuel residues.



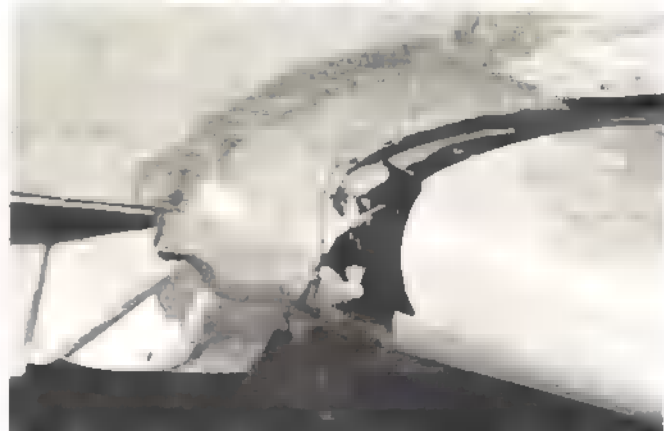
The 1/32" ply base and ribs set the contours of a balsa fillet.



Use electrical tape to shield the wing from excess Epoxolite.

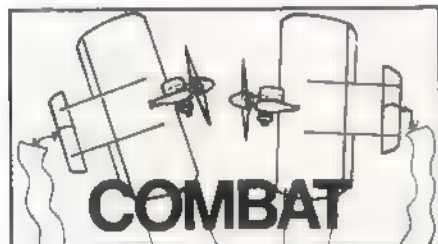


P-47D Razor Back by Ed Rhoads, Cinnaminson, N.J., was a winner at the Union MAC meet. Converted from RC to CL use, the model weighs 8 lb. and flies with a Fox Eagle 60.



The hardened fillet, ready for final sanding and paint.

The first step in Mike's suggested process is to obtain the smoothest possible surface by sanding and filling. Then apply a thin coat of epoxy paint to the area to be covered. Before the paint hardens, secure the foil. Smooth the foil and trim as needed. With a little practice (try it on scrap before application to the plane), this method should provide a smooth, finished surface, free of lumps and completely fuelproof.



DAN RUTHERFORD ON COMBAT

Veco Tanks Available Again: Veco fuel tanks have been in very short supply for about a year. But A&L Manufacturing recently purchased the Veco line of accessories from K&B, and they now have a large quantity of the tanks in stock.

All of the A&L/Veco tanks work pretty well, but the one with which we are most concerned is the 3 oz. profile tank. This is the T-28A tank, and it is the only really satisfactory fuel container for use on Slow Combat planes. All of the other tanks I have tried are either too long, don't hold enough fuel, or don't give a consistent engine run in maneuvers.



And here he is folks, Dirty Dan himself!

As most Slow Combat planes come out a little nose-heavy, it is necessary to keep the plane's nose as short as possible and still have room for a 3 oz. tank. This is where the T-28A comes in handy, since the tank is only 2 1/4" long.

World Combat Championships ■ Possibility: The Miniature Aircraft Combat Association is trying to organize the selection of an American FAI Combat Team for the '76 Control Line World Championships. Right now, we aren't even sure if the Dutch have agreed to have Combat as an unofficial event, in conjunction with the official World Champs events. If they do agree to host Combat, then we are faced with having to come up with some form of qualification for the Finals. We must also get permission to have the Combat Team Selections held next October, along with the Speed, Team Race and Stunt Team Selections to be flown in St. Louis.

If you are interested in trying out for the FAI Combat Team, get in touch with MACA—preferably by joining! My lead time for this column is such that I will not be able to publish much usable or timely information on this spring's qualifying contests, assuming that they come off as planned.



Richard Stubblefield (Houston, Texas), winner of Open Combat at the '74 Lake Charles NATS. (Photo courtesy MACA)

To join MACA and keep up on all Combat activities, including the FAI Combat Team thing, send check or money order for \$4.00 to Tom Southern, 2207 Paul, Longview, Tex. 75601.

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Senior Combat champs ■ Lake Charles (left to right), James Plake, Mark Daniels and Gene DiReaso. (Photo courtesy MACA)

FAI Nemesis Plans Available: Plans for Col. Howard Rush's FAI Nemesis are available from MACA. The plans are going for \$2.00 per set, plus \$.50 postage. Only a limited supply is available, and they are going fast. Write Tom Southern for these plans.

Col. Rush gave me a set of FAI Nemesis plans about a year ago, and I built three of them. The Colonel gave me a lot of help by crashing one of them — a test flight! The design is good, but, ■ with any Combat plane, they must be built straight. The

smallest warp will have you eating a mouthful of airplane if your FAI Nemesis isn't straight. The plane was designed around the Super-Tigre F.J. 15. This engine is recommended. Also be sure to use only .012 x 52 ft. lines.

For those of you who are dyed-in-the-wool AMA Combat fans, Howard Rush's original Nemesis is still available from AAM's Plans Service. Order plan No. 0822 and send \$2.25.

FAI Combat Rules Different: Before you enter any FAI meet, ■ sure to read the rules

thoroughly. If you don't know the rules, you may be in for a shock when you score a kill and lose!

In my opinion, the FAI rules are more suited to the American style of flying and design than AMA Rules. . . except for the "no-kill" rule, that is. With ■ little practice at flying FAI, I feel that the Americans could easily win the Combat World Champs. If you agree, get some FAI contests going in your ■ and try to be in St. Louis for the Team Selections. Let's show the world what "For-Real" Combat ■ like!

Experimental Combat Rules Tried: Phil Granderson is anything but satisfied with the present set of AMA Combat Rules. The same is true of ■ lot of Combat fliers, but Phil is trying to do something about it. To simplify the scoring and make each match ■ test of plane and pilot (instead of a race to see who can be the first to get their engine started), Phil has made up a new set of rules. He even sponsored a Combat meet to give his rules a try.

Other than the usual and obvious safety and equipment rules, Phil had only five rules for this meet: (1) Only cuts and kills scored. No air time points. (2) A kill ends the match. (3) The match ends after both planes are in the air, simultaneously, for four min., provided no kill has been made. (4) The match ends when a crash or collision renders one or both planes unflyable. (5) Everybody flies four matches.

Phil's contest was very interesting, to say the least! Next month, I'll let you know how the rules worked out in actual Combat conditions. In the meantime, why don't you do

■ serious thinking about changes you
(Continued on page 85)

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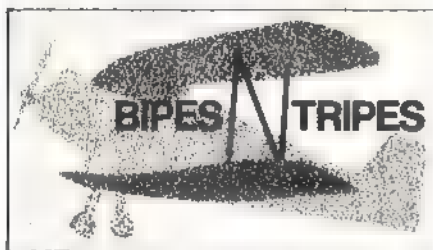
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O. L. (OLIE) OLSON ON MULTI-WINGED RC THINGS

Happy New Year! There's good news tonight. 1975 is going to bring more good things for the biplane-lovers of the world. "How so?", you ask. Well, just lay back and hang loose. Your favorite Nebraska columnist is about to hang it on you.

Jerry Nelson, father of the NSPA (National Sport Pattern Association), reports that the group now numbers over 100 strong and is looking toward the 200-member-mark by the time of its annual meeting in Toledo in March. Jerry's NSPA rules have been published in the *AMA Competition Newsletter*, for your consideration and for the perusal of AMA's RC Contest Board. If you have some constructive thoughts about these rules, now is the time to be heard.

Drop your district RC Contest Board member a line, and send a copy to Jerry. Jerry's address is 23 Marie Drive, Downers Grove, Ill. 60515. If you haven't joined the group yet, put in a five-spot. You'll never make a more worthwhile investment.

1973 saw the birth of multiwing competition, in Omaha, Neb., with the first annual Nation-

al Multiwing R/C Championships. In 1974, the NSPA was born at Toledo. In addition to Omaha's Multiwing Championships (which drew 30% more contestants than the previous year), other successful biplane contests or events were held from border to border and coast to coast.

1975 is going to be The Year of the Bipe. With the interest generated in '74, we should have bigger and better biplane events in every part of the country. If your club would like to join the movement and needs organizational help or suggestions, drop me a line in care of AAM or, better yet, give me a call on Ma Bell's telephone (402-551-4662, days; 402-393-7591, nights). Ask for Olie.

You say, "That's not enough good news." You're probably correct. Here's some more. We have some kits coming to spend our nickels on. Sig will be offering Claude

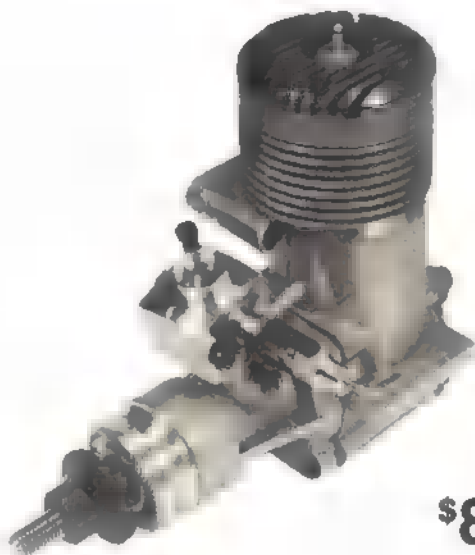
McCullough's Stear Skybolt. This 800 sq. in., 60-powered ship will be a welcome addition to the scene. Rumor has it that Soarcraft of California will offer a glass version of the same ship. Jack Stafford has promised to come up with an EAA Sport Bipe for us. Plans of Bob Schultheis' EAA Acro-Sport (Nov., 1974, AAM) are selling like wildfire. There is a nice set of isometrics available.

Ever hear of a Pulsair? Let me tell you something. You're going to. Back East, in Rutherford, N.J., lives an RC flier—Norm Cassella, by name—who has come up with an original biplane that I've seen perform. Believe me, it does! It's being kitted as a glass-and-foam combo. You should look it over when you get the opportunity. (We'll give you the opportunity, since AAM has it slated for an article—*php*.)

(Continued on page 85)



Lamar Steen's Skybolt, as built by Claude McCullough. A coming Sig kit (balsa supply willing).



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There is one additional biplane that deserves mention and soon will make the national scene, via the pages of AAM. Bill Heger of East Peoria, Ill. has a really excellent, semi-scale, 60-powered, Knight Twister that he has been wringing out around and about the Midwest. He has placed in both '73 and '74 at Omaha's Multiwing with this ship, and took first place in Nelson's SAC club biplane contest in Chicago in September. You'll see it soon, right here in our own backyard, AAM. (The article just arrived in my office, folks. It's super-bipe—php).

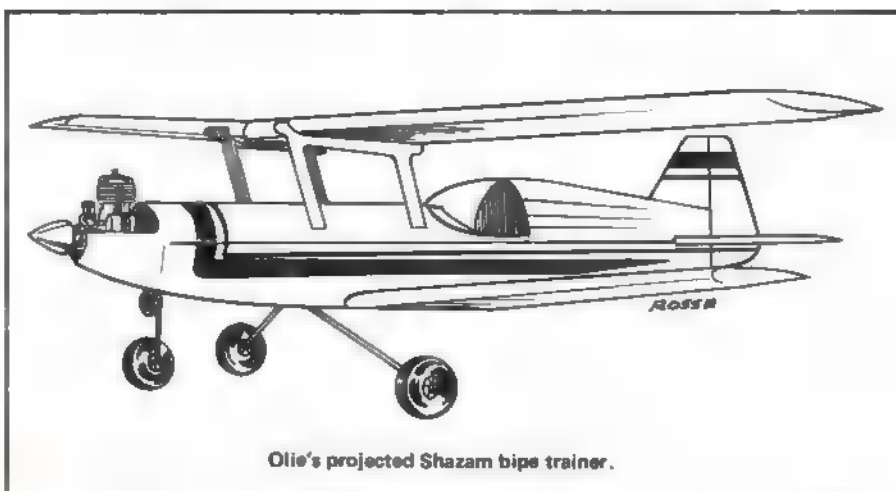
You say you want some more good news? You say you're not satisfied? You say you want just one more thing to brighten your New Year? Okay, I've got a secret for you. The kindly Swedish philosopher is having labor pains again—this time, from the birth of the world's first biplane trainer.



The Bipe Meister himself—Olie with the multiwinged thing, a VK Fokker tripe.

A few months ago, in a moment of thoughtless desperation, I said that, along with a return to the 5-cent hamburger and 10-cent sheet balsa, what this country needs most is another good trainer. Naturally if it were a "two'inger," it might even be a little better. So, move over Falcons, Kommanders, Bridi Trainers, Ugly Sticks and all the rest, here comes the "Shazam."

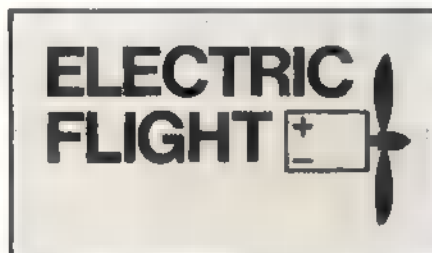
Before we go on, you-know-who used to say, let me make one thing perfectly clear. As far-fetched as it may sound, I have been known to make mistakes and have even had a design failure or two. Why not? Even the



Olie's projected Shazam biplane trainer.

Hindenberg wasn't a complete success. Pat Potega, our friendly Editor, considers this project a mind-boggler. I think it should be fun. Whatever the result, the design and development procedure should be interesting. We'll keep you advised as we go along. Who knows? If, by some miracle, we come up with another goodie, perhaps Patrick P. might print you a set of plans. (Sure, but not until Olie draws them, folks, so please hold up on the cards and letters till then—php.)

The design process for any new aircraft starts with a lot of soul-searching for aims and goals, ways and means. It consists of a certain amount of plagiarism and theft. It entails various amounts of modification and innovation. It evolves, eventually, into the first three-view drawings. The Shazam Bipe is at that stage. Keep your fingers crossed. Potega and God willing, we'll see you next month with more about the world of RC bipes and the Shazam.



MITCH POLING ON ELECTRIC FLIGHT

Electric RPVs: Boucher sent the following details about the RPV program at Astro Flight. I have seen some of these RPVs, and they are very impressive, both in size and power.

The recent article by Graupner on Fred Militky's electric-powered, man-carrying glider is most satisfying to many of us in the model industry (See May, 1974, AAM). It is a clear example of the many useful and innovative products which have had their origin in our industry, and counteracts the erroneous, but widespread opinion that modelers are overgrown children playing with expensive toys. In this regard, I thought your readers would be interested in RPV Program 7212 at Astro Flight.

This demonstration program was conducted with our joint venture partners, the Northrop Corp., wherein Northrop is responsible for the overall system and electronic surveillance payload, and Astro Flight had prime responsibility for the flight vehicle, including airframe, propulsion and control.

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Dave Shadel gives a hi-start to Astro Flight's RPV project. (Photo courtesy Astro Flight)

Astro Flight, in turn, subcontracted the radio control and electrostatic autopilot to S and O radio, and the battery development to Eagle Picher Corp.

The purpose of the 7212 program was to demonstrate that small, electrically powered, remotely piloted vehicles (patents pending) could perform useful surveillance missions by carrying small electronic payloads moderate distances in almost absolute silence, not to be easily detected.

Other uses and advantages of the Astro Flight electric system were (1) instant start for quick reaction; (2) in-flight motor turn-off for listening; and (3) clean propulsion, so that we could sample the air for pollution without smelling ourselves instead. Another program goal was to develop a very rugged but efficient airframe utilizing a flying wing platform.

During this nine-month program, four vehicles were built and flight-tested. Vehicles No. 1 and No. 2 were used to prove out the structure and aerodynamics, and were powered by two, stock Astro-25 motor and NiCad battery systems. Vehicle No. 2 was flown extensively for a special RPV program which was aired on NBC News.

We had to make a special tape recording of motor and propeller noise by holding a microphone next to the airplane and running the motor on the ground. The TV director thought that no one would believe a silent airplane. Anyway, the flight film would be less dramatic without noise—like a Charlie Chaplin movie. Flights averaged 8-9 min. duration with a 15-min. "quick" charge between flights.



Bob Boucher holds the unfinished airframe of RPV No. 2. (Photo courtesy Astro Flight)

Vehicle No. 3 then was constructed, using the special silver battery developed for us by Eagle Picher Corp. A payload compartment for carrying 6 1/2 lb. of electronics was provided but, for most flights, we carried a lead brick to simulate the weight of the "black boxes."

On its maiden flight, No. 3 exceeded our design goals by flying for over one hour and traveling more than 50 miles. After subsequent tests, a third motor was installed on the vertical tail to improve the climb rate.

Because of the heavy wing loading (48 oz./ft.²), an excessive ground roll would have resulted had a normal takeoff been attempted. Instead, we used a stock "Astro Start" with the bungee doubled over twice to give four strands about 41 ft. long. Dave Shadel built a dolly similar to that used in Ukiah speed mod and, with the bungee, could get the ship to 100 mph at 3 ft. altitude every time. Performance characteristics are given in Table I.

TABLE I

Wingspan	8 ft.
Wing	sq. ft.
Length	28"
Airfoil	12% symmetrical
Motors	3 ea./Astro-25 electric
Props	Top Flite 8 x 8
Battery	Silver zinc 26V at 15A/hr.
Max. endurance	1 hour, 20 min.
Max. level flight speed	75 mph
Cruise speed	50 mph
Range	50+ miles

Bird No. 4 was built with a new, higher lift airfoil to reduce landing speed, used ducted fans, and had the payload in the wing. The ducted fans were disappointing, but the new airfoil worked well, and reduced landing speed from 40 mph to about 25 mph. When the propeller shrouds were removed, performance improved. The 7212 Program was completed in the fall of 1973.

Since that time, Astro Flight has continued investigating the use of small, electrically powered RPVs for use in air pollution control, aerial photography, and military surveillance tasks. I believe this story illustrates the many innovative products which have had their origin in our industry.



BOB MEUSER ON FF

Call For Papers: The National Free Flight Society is soliciting papers for the NFFS Symposium to be held at the 1975 NATS. Papers will be published in the symposium, whether or not the author is able to present his paper in person at the NATS. Papers should address some aspect of the science or art of free flight modeling, including technical studies; practical design and engineering as applied to models; new or unusual model aircraft developments; or historical items. Both the Indoor and Outdoor aspects of free flight are to be included. Abstracts or complete papers should be submitted by March 15 to W. Hewitt Phillips, 310 Mantec Ave., Hampton, Va. 23661.

Hewitt, the Symposium Editor for 1975, has been engaged in Indoor and Outdoor free flight modeling since the Thirties. When he was a student at M.I.T., he helped build an ultra-low-speed wind tunnel for testing indoor model components. In everyday life, he is chief of the Flight Dynamics and Control Division of NASA's Langley Research Center.

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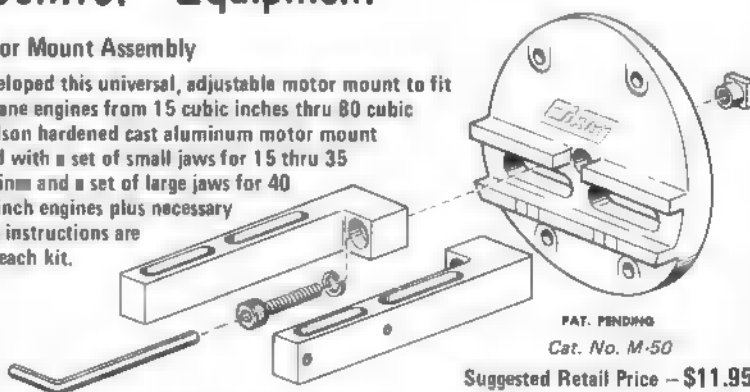
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Rules Change Proposals: Pennyplane, which has established itself ■ a challenging and popular Indoor event, despite the stigma of its unofficial status, has been the most popular Indoor event at the last four NATS. No one has made ■ formal proposal to the AMA to include Pennyplane in the Rule Book, until recently, when the Oakland Cloud Dusters took the bull by the horns.

There has been some criticism that Pennyplane has outgrown its original intent, and has become ■ event in which only experts can achieve proficiency and enjoyment. I would hold that the only way that you can keep the experts from winning is to tear up their time cards, or stomp their models to death; then the word "competition" rings with ■ dull thud, for beating the experts at their own racket is what competition is all about.

Nevertheless, the Cloud Dusters, in deference to those who think otherwise, have proposed two Pennyplane-like events. The Pennyplane event is to be administered according to the rules that were originally proposed by Erv Rodemsky, and which have proved so successful: 3.1 gm. (the weight of a U.S. penny) minimum weight, 18" maximum wingspan and overall length, 10" maximum motor stick length, and no enclosed motors, multiple motors, or geared drives.

The proposed Novice Pennyplane has additional restrictions: 5" maximum wing chord, 4 x 12" maximum stabilizer dimensions, solid one-piece motor stick, 12" maximum prop dia., and ■ restriction against gadgets such ■ variable pitch mechanisms, variable incidence angle surfaces, etc.

No restrictions on covering materials were felt necessary, as a model of the specified dimensions can be covered with regular tissue, laundry bag plastic, or Saran wrap without greatly exceeding the minimum weight. Similar rules already have been tried and found to work well for beginners.

Another proposed change is to revert the gross weight of Coupe d'Hiver models back to ■ gm. The current 100 gm. minimum imposed on us by the international CIAM, has had the effect of making the event one in which only an expert can achieve any degree of success. The result has been to stunt the growth of what had been a fine event for both beginner and expert, not only in the U.S., but

throughout the world. A number of other proposals for changing Coupe have been made, and they are not without merit. My greatest fear is that the Contest Board may view these alternatives as evidence of lack of unanimity of opinion, and fail ■ take definitive action. I hope I underestimate them.

Under the current rules, ■ they have been administered in some quarters, a contestant ■ held responsible for the actions of another person over whom he has absolutely no control. E.G., if the *timekeeper* strays more than 200 ft. from either the point where he was when the model is launched, or the point from which the model ■ launched (the present rule is not clear), the *contestant* may be disqualified. The proposed change attempts to rectify what appears to be ■ unjust rule.

Would you believe that an engine having ■ displacement of 0.0506 cu. in. cannot fly in any AMA competition events? It might be argued that since there ■ no engines of that displacement, the point is moot. But if there are no such engines, why did the rules-makers bother to specifically ban them from competition? Oh, well, there is probably some historical (or perhaps *hysterical*) reason for it that we kids wouldn't appreciate.

But more to the point (Yes, Virginia, there really is ■ point to all of this somewhere): Under the time-honored rules, a guy flies his Dusterlitedoctor 302 in Class 1/2A with an 049 engine, then replaces the ■ with ■ 051 and flies it in Class A. Now, in ■ seriousness, can anyone in the whole, entire, blue-eyed world explain to me what useful purpose that serves? Well, it *does* prevent Joe Poorkid, who happens to live on the wrong side of the tracks, from beating Throckmorton J. Gotrocks III in two events rather than one, because Joe can't afford to buy both an 049 and an 051. If keeping the "riff-raff," such ■ Joe, out of our sport is a useful purpose, then the current rules *do* have ■ useful purpose, and I am wrong. I have formally proposed that both Class A and Class 1/2A encompass both 049 and 051 engines.

Erv Rodemsky Tried For Assault: Yes, it's absolutely true; in fact, both Erv and Bud Romak assaulted the official World Record for Indoor Rubber-Powered models. Bud tried ■ bit *too* hard, and his model proved too fragile to stand the gaff.



Erv Rodemsky's Monster flew 45:50.

Late last summer, Erv put up what is probably the longest official flight on record, beating the established World-Record time handily. But his officially recorded time of 45:50 did not exceed the existing record by the required margin, so no new official record was established. He later flew the model at the AerOlympics, but it drifted into the rafters and was destroyed. Both Bud and Erv are still working at it and, considering their initial success with ■ class of model that was strange to both of them, success is merely a matter of time.

Here are the specs ■ Erv's model: Wing area, 600 sq. in.; span, flat, 57"; chord, 12"; motor stick length, 26"; weight, 0.146 oz.; prop, 28 ■ 37; power, four strands of 2 mm Pirelli, 30" long; prop speed, 40 rpm average.

Timerless Timing: If you are intent on ■ high-performance 010- or 020-powered model, the half-oz. plus weight of a mechanical engine timer is ■ severe penalty. A calibrated eyedropper glass, serving ■ the fuel tank, constitutes one time-honored solution, but it is not without its own penalties: The fuel-level change affects engine operation during the motor run; and the fuel aerates, which makes the motor run erratically and makes the reading of the timing scale difficult.

A better solution, and one that also solves the problem of leakage in Cox 020 Pee Wee tanks, is suggested by *Hot Leads*, newsletter of the Southern California Antique Model Plane Society (SCAMPS), edited by James Dean. The stock tank is used only as an en-

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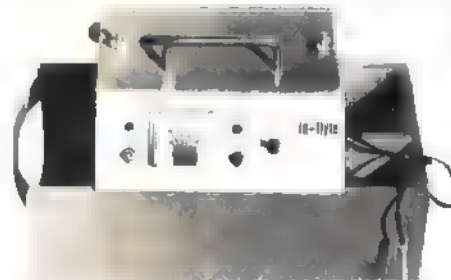
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gine mount. A 12" piece of fuel tubing serves ■ the tank; it holds enough fuel for ■ 20-sec. motor run. One end is fastened ■ the needle valve. The tubing is wound around the stock piece of metal tubing. This ■ fixed to the fuselage, with one end protruding beyond the side of the plane. An auxiliary fuel tank is connected to the protruding metal tube for starting and tuning the engine. Just before the plane is launched, the auxiliary tank ■ pulled off, and timing starts.

A system for use with rotary-valve engines having a crankcase pressure tap is under development by John Ferrer, Thunderbugs president and NFFS Symposium Editor. A piece of glass tubing is fixed to the side of the fuselage in a horizontal position. A piece of flexible tubing goes from one end of the glass tubing to the needle valve, and a second piece is connected between the other end of the glass tube and the crankcase tap.

A close-fitting Teflon piston slides within the glass tube, to provide a boundary between the pressurized air and the fuel. The piston also serves ■ the "pointer" on a scale which is calibrated to indicate time in seconds. A 4" length of 1/4" OD tubing gives a total motor run of about 35 sec. That is ample for starting and tuning the engine, as well as ■ 10- or 15-sec. power run.

For ■ 10-sec. motor run, the piston travel is about 7/8". That is about the same ■ the arm length of the pointer travel on a mechanical timer, so the time resolution should be similar. Over a period of 60 sec., timing accuracy is repeatable to within one sec. on the bench. Scaling that to a 10-sec. motor run gives a repeatability of 1/6 sec. Whether flight testing will confirm this remains to be seen.

Resolution can be improved by using tubing with ■ smaller dia., but ■ longer length will be required. The total weight of the system, with fuel, is ■ mere five grams! Compare that with the weight of ■ tank, timer, a tankful of fuel, and the rest of the plumbing.

John suggests the use of laboratory pipettes for the glass tube, as they come in various sizes, have a graduated scale etched on the surface, and have one end already necked down. Ordinary laboratory tubing comes in one mm increments, and the ends can be easily necked down by heat-softening and pulling. Preventing the wall from getting too thin



Red Johnson, of the Southern California Max Men, takes a lunch break at the '74 NATS. For dessert he ate the photographer.

requires a glassblower's skill. The variation in diameter from one tube to another is quite large, but the uniformity of diameter and circularity of any one piece is quite acceptable. Various wall thicknesses are available.

A feature of any system that depends on the ■ of fuel consumption for timing ■ that an out-of-tune motor will result in an overrun. This can be an advantage, ■ that you will be credited with an "attempt," and will be able to repeat the flight... unless you are already on your last attempt.

WALT MOONEY ON FF

From Russia (And Other Places) With Love: One of the side benefits of writing this column is the fact that it give one a chance to

get acquainted with corresponding modelers from far places. Leonid Ugryumov, of Staroscherbinovskaya, U.S.S.R., sent a photo of his 1/24th scale Nieuport 17 in Russian markings. Leonid is ■ FF Scale enthusiast and we hope to ■ more of his efforts.

Fernando Ramos, of Villa Park, Calif., is really a clever scale builder. His models are all



Fernando Ramos found a smart way ■ conceal a CO-2 engine in his clever DH-2. (Photo by Walt Mooney)

■ little out of the ordinary, and his DH-2, powered with a Brown CO-2 engine, is ■ fine example of his work.

Ron Limbrick, of Thunder Bay, Canada, has designed and built ■ neat little, all-sheet model of the world's first rocket plane, the Opel Sander RAK-1. It is powered by a Jetex 50. He did an excellent job on the plans, as



Ron Limbrick's Jetex-powered RAK-1.

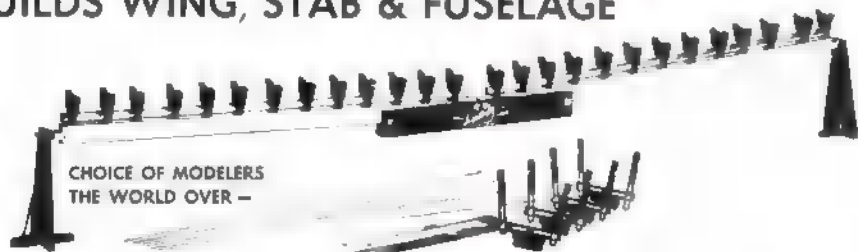
well, and I understand that Bill Hannan is going to sell them.

Russ Brown, of the Cleveland Free Flight Society, sent in a photo of John Grege's Peanut Scale 1916 Wright quad, sitting next to the trophy it won. There is more than ■ way to get ■ lot of wing ■ on a Peanut.

Henry Frautschy reports that he took fourth place at the Chicago Scalemasters 1974 All-Scale rally, flying a Peanut Scale Douglas AD-4B Skyraider. First in Peanut was Chuck Markos with ■ J-3 Cub; second went to Bill Naylor with a Corben Super Ace; and third to Ted Dock with a Piper Vagabond.

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At the same contest, James Gerz took first under AMA Rules with a Pietenpol Air Camper, E. F. Fort was second with a Rearwin 6000, and Bill Naylor third with another Air Camper.

Bob Peck, of Peck Polymers, has come out with a couple of new Peanut Scale kits to add to his range of Peanuts. These are a P-51 D and a Mitsubishi A6M2 Zero. The Zero is built over keels in the two half-shell method,



Peck Polymers' latest is this A6M2 Zero.

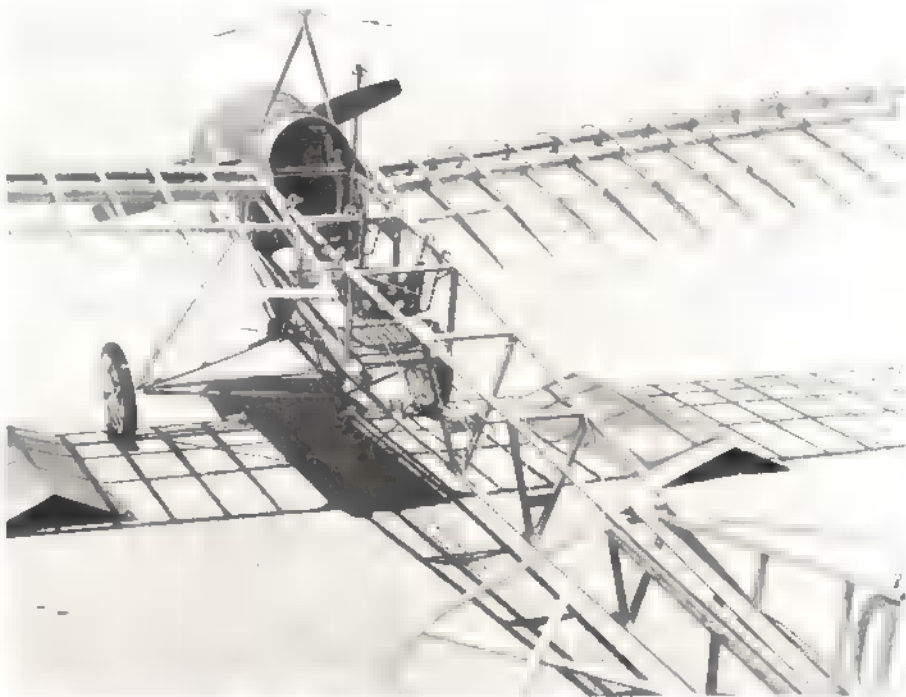
and it makes up into a nice looking and flying model. The P-51 uses a basic box fuselage. I've built both of these models fly and they go well, indeed. The kits include printed wood, sticks, sheet, colored tissue, decals, vacuum-formed canopies, wire, plastic wheels and props. Also, excellent plans and instructions are there, in the usual grand style.

John Martin, who will be writing a future guest column for me, sent a copy of *The Hangar Pilot*, the newsletter for the Dade Park and Recreation Dept., and Miami Indoor Aircraft Model Assn. These guys are really doing well. They have the Opa Locke Blimp Hangar scheduled, once a month through next May, and the Miami Dade North College Gym once a month, also. Looks like they should have lots of well-tested models.

At their first contest, Bill Miscock took first in Peanut with a Waco E. In Rubber Scale (Junior/Senior), Charles Slater took first with a Volksplane and, in Open Class, Bill Miscock took first again with a Waco E.

They are using a new approach for flying Indoor Scale that I like. They take the best two flights out of nine attempts. This results in a lot more flying, which is the real fun in this model game. Nine attempts outdoors in the wind might be pretty rough, but indoors, it's a breeze.

R.E.P.—One of the world's early aircraft constructors was a Frenchman named Robert



Tom Stark's R.E.P., above and below, shows his attention to internal and external detail.



Esnault Pelterie. Like many designers, he wanted his products named after himself but, because of the long name, he used his initials, R.E.P. All this leads into the excellent model of the R.E.P. Model K, designed and built by Tom Stark of Florissant, Mo. Scale structure, as well as scale configuration, has been carefully duplicated. The model has been finished with all the scale markings, i.e., none at all, except for an overall red paint job. (All the R.E.P. aircraft were red.)

The "K" was built in 1913 and was quite advanced for its time. The R.E.P. name could have been more well-known, since these designs were certainly as good as any at the beginning of WWI. However, the French Air Force didn't want red airplanes, and Pelterie wouldn't make them any other color.

Stark's model is 1"=1 ft., just under 40" span, weighs 12 oz., and is powered by a Cox Babe Bee. It took second place in the '72 and '73 NATS.

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MARONEY ON SOARING

(Continued from page 68)

suggests there is a need to provide two or more separate contestant classes for fliers of these models (similar to RC Pattern classifications) which would allow the more experienced fliers to compete with one another and to allow the novice to compete with others of the same stature.

His proposal is to expand 39.10 to include and define two contestant classes: "Classification shall be based on competitor's past experience" in the following manner. "Leader Class" shall consist of all contestants who, in previous competition, have earned four or more points according to the following schedule: First place—3 points, second place—2 points, third place—1 point. ("Leader Class" could be further subdivided at the CD's option.) "Competitor Class" shall be open to all contestants who have not yet accumulated four or more points. A contestant may, at his option, compete in the more advanced category. If he so elects, he shall so compete for the remainder of the calendar year.

RC-76-17 Sailplanes, Elevate Prov. Task IIA: Submitted by Earl E. Pell, Rochester, Mich., proposes to elevate to official status the rules currently titled IIA—Precision Duration (Provisional), which is in the right-hand column of the Rule Book, page 47, and to eliminate the rules titled Task IIA—Precision Duration, in the left-hand column of page 47. He indicates that the rules he wishes deleted lack the precision inferred in the heading in that precision is required only for the last flight.

RC-76-18 Sailplanes, Task I Title Change: Suggesting that FAI overtones should be removed from AMA RC Sailplane Rules, and to keep AMA Rules under the jurisdiction of AMA, Earl E. Pell proposes to change the title of Task I from "International Duration (FAI Provisional Rules For Class 'A' Competition Gliders, 1973)" to "International Duration."

RC-76-19 Sailplane Classifications, Builder of Model: Submitted by David K. Corven, Warren, Mich., wishes to classify sailplanes by size and function, an idea he finds currently lacking in the Rule Book. His proposal, which also provides for the Builder-of-the-Model rule not to apply, is to delete 39.3 and replace with the following:

(3) Model Sailplane Specifications.

(A) The following classes of sailplanes shall be allowed for competition:

CLASS A Standard Class Sailplane. This category covers the basic 100" (or less) projected wingspan sailplane. Only rudder and elevator controls are allowed.

CLASS A Modified Standard Class Sailplane. This category covers the regular 100" (or less) projected wingspan sailplane without limitation to functions or equipment.

CLASS C Unlimited Class Sailplane. This category covers the Unlimited Class sailplane without limitation on wingspan, functions, or equipment.

(B) The above sailplane classes will, at all times, also comply with AMA and FCC regulations unless otherwise stated hereunder.

(C) Maximum surface area, weights and wing loading: max. area, 2325 sq. in. (150 sq. dm); max. weight, 11.023 lb. (5 kg); max. loading, 24.51 oz./sq. ft. (75 g/sq. dm).

(D) The Builder-of-the-Model rule shall not apply.

(E) A contestant may enter his Class "A" sailplane in Class "B" or "C" events, or his

Class "B" sailplane in Class "C" events.

SC-76-36 RC Scale Sailplanes—Flight Plan and Official Score: Submitted by Ron Martelet, River Forest, Ill., says this event needs to encourage a greater variety and higher quality of subjects, with emphasis on scale fidelity, but with reward for pilot skill; the present rules are too heavily weighted in favor of flight. His proposal is to revise the flight plan (42.9) and official score (42.11) as follows.

(9) FLIGHT PLAN. The model must remain airborne for 120 sec. to make an Official Flight. Time will start at tow release and stop at 120 sec. duration or termination of flight, whichever comes first. Five attempts will be allowed to make two Official Flights. Two Official Flights are required.

The aircraft should perform the following tasks in a scale-like manner, and points will be awarded accordingly.

(a) Straight Tow—50 points maximum.

(b) Good Transition from Tow to Glide—50 points maximum.

(c) Smooth Scale-Like Flight—50 points maximum.

(d) Scale-Like Landing Approach to Touchdown—50 points maximum.

(e) Spot Landing (20 ft. radius)—10 points. 210 Total Flight Points Possible.

All flights should be judged by the same Flight Judges—two judges, minimum required.

All models should be static-judged before they are flown.

All Static Scores should be made known to all entrants at the conclusion of static judging.

(11) Official Score—The Official Score shall be determined by adding the Scale Judging Score, the Scale Operations Points and the Flight Points.

Final Score = S.J.S. + S.O.P. + F.P.

STOCKWELL ON RC RACING

(Continued from page 70)

or Jim Maki or Cliff Telford or Jerry Wagner or Gale Helms or Jack Stafford or—it's a long list, and you've heard the names many times—to make them familiar household names to modelers everywhere.

I think that Formula I pilots are a special breed of cat even among RC modelers, who are themselves a special breed of cat, and it's been my privilege to try to explain just what it is that makes them special.

They're certainly not all the world's best sports. In fact, they tend, as a group, toward the prima donna end of the personality spectrum. That's true of competitive racing in general: You have to be strung tighter than average. People who shrug their shoulders and say, "Oh, it's just a hobby"; such people don't understand that it's not really fun—unless you take it seriously; unless you rise to the incredibly exacting standards of those screaming engines (the world's most efficient reciprocating engines, by a wide margin); unless you worry about every detail of the engine mounting, alignment, cooling, control surfaces, finish. With every piece of your equipment being pushed to its absolute limits, there is no tolerance for error of any kind.

The demands on the pilot in aerobatic competition are enormous: The level of perfection which that pilot must achieve through practice is substantially beyond what the racing pilot must do. In racing, good reflexes can come close to doing what only practice can do for the aerobatic competitor. But, con-

versely, the demands on the aircraft in racing far exceed those placed on RC pattern aircraft, in respect to workmanship and attention to detail.

What is worse, the Formula I pilot who has built a super airplane with a finish like glass knows that the chances of his plane's surviving a contest are about one-tenth the chances of a stunt ship surviving an aerobatic contest. He has to develop a very special kind of persistence, fortitude, nerve and guts to carry his bird out to the starting line at all, given the certain knowledge that its lifespan will be distressingly brief.

Over the years of watching formula fliers go through the wringer that such demands put you through, I've developed unlimited admiration for their capacity to joke about the—to me, excruciating—pain of a mid-air collision, their capacity to come back for more, whether it's another beating at the hands of Terry Prather, or another run with an engine they know is already over the hill; their capacity to try just a little harder the next time out; their stubborn faith that next time, they'll make it in spite of their three goose-eggs up on the scoreboard.

I saw Joe Foster beat Cliff Weirick in 1967 at Los Alamitos, and I've seen every National Championship from then 'til now: All of the champions I can, I think, call my friends—Granger Williams, Cliff Weirick, Bob Smith, Terry Prather, Larry Leonard, Bob Violett and Gale Helms. I hope I will see the next several, and I hope that when my pilot finishes his education, he and I will have time to get with it again seriously. Meanwhile, I hope my successor in this column serves you better than I have: But, better or worse, he will not enjoy the privilege more.

McCULLOUGH ON RC SCALE

(Continued from page 73)

replace with one layer to allow the inner edges previously concealed to be painted.

Bob says that the Epoxolite is very flexible. It sticks to butyrate clear plastic well and, in any case, the 1/16" holes lock the inner and outer frames together, in effect riveting them to the canopy.

This same method should be used for fastening a windscreen solidly to the fuselage. While pinned in place, drill through the bottom edge into the fuselage planking or structure. When the putty is smoothed into a fillet at the fuselage-canopy junction, it will be forced down into the holes in the fuselage, "nailing" the windscreen on with Epoxolite.

Take Note: Cockpit details are about the hardest thing to locate when scale data is being gathered for a building project. Air Data Publications, Back West Crescent, St. Annes-On-Sea, Lancashire, England, have an answer in a list of 81 mainly WWII *Pilot's and Flight Engineer's Notes*. These handbooks were reprinted with the permission of the British and U. S. governments from the actual publications issued to flight crews of the aircraft. Just about all of them contain fold-out cockpit photos, drawings and diagrams, and many have other detail illustrations.

In addition to familiar types like Spitfire, Mosquito, Hurricane and Lancaster, rarer birds like the Dominie, Hornet, Barracuda, Albacore, Tempest and Whirlwind are available. American airplanes include Airacobra, Catalina, Avenger, Hellcat, Corsair and Mitchell.

Proprietor of Air Data is I. E. Stretch, ■ assistant sales manager of British Aircraft Corp. He plans further additions to the list of *Notes*, and also has cutaway drawings and silhouettes. A complete catalog may be obtained from him at the above address. *Pilot's Notes* are \$2.36 each, including postage, and \$.75 must be added to personal checks for bank-handling charges. Preferred payment is by international money order or sterling check, for which no additional cost need be added.

RUTHERFORD ON COMBAT

(Continued from page 76)

would like to ■ made in the AMA Combat Rules and let me know about them. If you have also experimented with unusual or simplified rules, let me know about that, too. Write to: Dirty Dan Rutherford, c/o AAM.

Combat Flier's Motto: Put something exciting in your hand. Fly Combat!

EXTINGUISHING THE ISSUES

(Continued from page 18)

ference. Other issues are so sweeping in scope that tomes of documentation could be written—here we can only scratch the surface. We at AAM don't have all the answers, but the function of a magazine isn't necessarily to solve problems; sometimes it is just as important to define the issues or to ask the questions.

The magazines ■ news media—the modeling press would certainly make no pretense of being ■ timely purveyor of news. AAM isn't a newspaper, nor even a news magazine; however, we do have an obligation to report on significant events.

I have long been bothered by the fact that AAM can't, because of its deadline schedules, get the news out within even ■ few weeks of its happening. But all the magazines are in the same position, so that equals out.

The solution is to do what any quality magazine does—to offer signifi-

cant coverage of an event. The AMA news section of AAM (which, by the way, functions as a totally separate entity from the magazine itself) usually lists complete results of the major contests. With this in mind, my Editorial policy has been to avoid listing long litany of winners' names. Instead, we try to get behind the scenes, to where the action really is, and offer insights into the events. If we can't offer timeliness, we can at least make a contest report a learning experience; not only for those who were there (they already know the winners), but for the majority who weren't (they usually can't identify with a list of faceless and empty names). Our December LSF report is an interesting example of how a contest report can be made into interesting reading.

But let's get down to the nitty

gritty. I was pleasantly surprised to find that AAM can be as timely ■ the *Competition Newsletter*, for example. In their late October issue, the S.O.A.R. Nats report appeared. AAM had a full, six-page, photo-and-story article on this major event in the readers' hands weeks earlier. As of this writing (early November), only one other national model magazine has even mentioned this significant event.

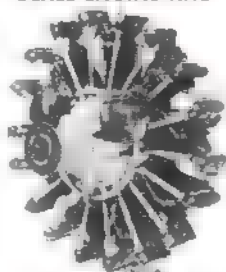
While we're at it, let's pursue the most important events in U.S. model-dom this year, the AerOlympics and the NATS. This discussion will also take into consideration Mr. Fraher's comments about the "Pollyanna press," which contains "paragraph after paragraph of sickening self-praise."

The stature and significance of an

(Continued on page 88)

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STAND-OFF SCALE

0843/5AAB—Stand-off Scale. This WWII Swedish fighter is a pusher, with twin tail beams. Of all-balsa construction, the plane can be built in two sizes, for either a 35 or 45 engine. A good choice for getting started in Stand-off Scale. Four-function equipment. Two plan sheets. Designer: Fred Angel. (August, 1974, AAM) \$4.95

1103/AKROMASTER—RC scale/stunt model or real aerobatic plane for 45-60 engine. Fast and responsive, easy to make, simple shapes. Designer: Robert Schultheis. (November, 1970, AAM) \$2.75

1181/JUNKERS D-1—Joe Tschirgi's 1918 fighter, good proportions/interesting lines for perfect RC scale. Uses .45 engine. This low-wing has 500 sq. in. area. (November, 1968, AAM) \$2.50

1032/CONSOLIDATED B-24D LIBERATOR—Would you believe a 55" wingspan, four-engined, RC, three-channel B-24D with a flying weight of 36 oz.? It flies great with four 020 PeeWees. Designer: Lee Kiracole. (October, 1973, AAM) Two sheets for \$7.00

BEAUTEOUS BIPES

1141/EAA ACRO-SPORT—Scale and Sport Pattern Biplane. Model of the most exciting home-built of the decade is a natural for the N.S.P.A. event. Simple construction can use either built-up or foam wings. Four ailerons for championship aerobatics. Four-function radio. Sixty engine. Designer: Robert Schultheis. (November, 1974, AAM) \$3.75
Special Offer: 1141-A—Bill Blake's cutaway drawings of both the full-scale and model Acro-Sport. Large size, suitable for workshop wall display, only \$2.00. When ordered with the model plans specify Plan Service number 1141B for all three and remit \$5.75

1042/MALLARD—RC Sport Bipe. Designed to do the Pattern, this unorthodox-looking bipe can serve as a good introduction to the NSPA event. Trike gear and lack of cabane

struts make building a snap. Retracts not shown, but very possible. All-balsa construction. Sixty engine. Four-function radio. Designer: Dan DeLuca. (October, 1974, AAM) \$4.00

SCALE

0941/LEPERE L.U.S.A.C.-11—Scale WWI bipe. Large size (1580" sq. wing area), exact scale model can be built with military or civilian trimming. Fully enclosed engine (60-71 size) in a uniquely molded metal cowling. Model corresponds to a full length AAM article on the full-size plane. Four-function radios. Two large plan sheets. Designer: Floyd Carter. (September 1974, AAM) \$10.00

0242/PAZMANY PL-1—A great scale subject from Nick Ziroll. Formerly a military trainer, it features all-moving stab and all-balsa construction. Uses 45 engines. Two plan sheets. (February, 1974, AAM) \$6.00

0801/WINNIE MAE—Spectacular RC Vega, the one Amelia Earhart flew, for strong 60 engine in 2"-1 ft. scale, foam and balsa, lots of details. By Monty Groves. Two big sheets. (August, 1970, AAM) \$4.50

Also, special 1 1/2" to 1 ft. version, 40 through 60. Two sheets. Order # No. 0802 (August 1970, AAM) \$4.25

DUCTED FANS

0746/SUNDOWNER (F-4B PHANTOM)—Ducted fan Stand-off Scale and Pattern ship. This practical ducted fan design uses the commercially available J. J. Scozzi "Turb-Ax 1" unit. Standard balsa fuse and foam wing construction techniques. Anhedral stab and polyhedral wing capture the rakish lines of this popular design. Plane is totally capable of contest caliber maneuvers. Hot rear rotor 40 engine. Designer: Bob Violett. (July, 1974, AAM) \$5.50

0143/METEOR MK6—CL Scale model uses unique ducted fans (two) and 40 engines. Text and plans explain fan construction. Large ship has 58" wingspan, 66" length weighs 12-13 lb. Designer: David D. Nelson. (January, 1974, AAM) \$6.00

Racer. 23" span model is patterned after the famous Curtiss Pitts Racer. Designed by Glenn Lee, this racer is competitive and durable. Plans show complete details of all accessories and components. Hot 15 engines. (February, 1974, AAM) \$4.50



0253/FLYMOBILE—RC trainer and convertible seaplane. All-balsa construction. Pylon mounted engine for trouble-free water operation. On land, the model uses dual landing gear (four wheels) like a "roadable" plane. On water, the LG adapts easily to pontoons. Three-function radios; 29-35 power. (February, 1974, AAM) \$5.50

INTRODUCTORY PRICE ON NEW ILLUSTRATED PLANS CATALOG

1001/PHANTOM—Well-engineered RC Dyna-Jet-powered scale fighter by Ralph Saldívar is practical, but noisy model. Highly detailed plane. Jet installation shown. (October, 1970, AAM) \$4.00

HELICOPTERS

0825/S.S.P. RC HELICOPTER—Gene Rock's simplified and well-proven design for home-builder needs minimum critical machined parts. Features belt-drive, 45-60 engine, gyro stabilized main and tail rotors. Large, highly detailed plan is full-size, including sub-assemblies. This helicopter has broken all plans sales records. It's superb. (August, 1972, AAM) \$6.00

0826—Full-size drawings for making special machined parts for Gene Rock's RC Helicopter. Not essential, parts are available from Stock Drive Products, Inc. Please refer to the August, 1972, issue of AAM (back issues available at \$1.00, while supply lasts). \$2.00

PATTERN

0154/SEQUEL—RC Pattern. Now the newcomer to pattern can build a competitive model. The two-part article (January and February, 1975, AAM) is replete with photos of the construction sequences. This is a step-by-step presentation, with lots of handy hints to ensure success. It is suggested that you have the magazine articles on hand (back issues available at \$1.25 ea.) Four-function radio, 60 engine. Designer: Bud Weber. \$8.75

0154A/SEQUEL—(Special Offer). Since the author recommends duplicate plan sets for proper building of this model, AAM is offering two Sequel plans at a special price. Specify Plan Service No. 0154A and remit \$15.75

1241/MISS PARANOIA—Styled after the P-51, this fiberglass and foam, QM racer emphasizes clean aerodynamics. One of the fastest QMs around, this model uses coupled ailerons and rudder. Three-function radios required. Hot 15 engines, with throttle. Designer: John Fotiu. (December, 1974, AAM) \$3.50

0944/YANKEE—RC Pattern. Emphasizing soundness, honesty and smoothness, the Yankee is designed for functional flying. No gimmicks or tricks, this is a pattern ship that will give consistent performance. Foam wing and stab, with balsa fuse. FAI-style lines. Retracts and slide-mounted engine. Large, well-detailed plan sheet. Designer: Bob Noll. (September, 1974, AAM) \$5.25

0741/EL TIGRE—AMA Pattern Ship. A pronounced vertical fin gives the fuselage a streamlined "flared" look. Semi-mid-wing (foam cores commercially available) is based on Jim Kirkland's Triton for smooth, reliable maneuvers. Four-five function radio, with retracts; 60 engine. Designer: Dennis Donohue. (July, 1974, AAM) \$5.00

0643/NOVI ARROW—FAI Pattern ship. Designed by John Brink, twice winner of the South African Nats, and noted internats competitor. Large 70" elliptical winged model emphasizes light wing loading for smooth maneuvers. Large plan sheet is highly detailed. For retracts and 60 engines. (June, 1974, AAM) \$6.00

GO FAST

1241/MISS PARANOIA—Styled after the P-51, this fiberglass and foam, QM racer emphasizes clean aerodynamics. One of the fastest QMs around, this model uses coupled ailerons and rudder. Three-function radios required. Hot 15 engines, with throttle. Designer: John Fotiu. (December, 1974, AAM) \$3.50

0203/OLE TIGER—Bob Morse's swift, Formula 1 RC of Bob Downey's famous racer. K&B 40. (February, 1970, AAM) \$3.50



0251/PIPED BEE—Class B Speed Ship. Capable of 200 mph, this design is by the renowned Glenn Lee. Plans show complete construction details, as well as the fabrication of a speed dolly. For tuned pipe 29 engines. (February, 1974, AAM) \$4.50



0252/PITTS SPECIAL—Goodyear Scale

0031/OLE TIGER—Sleek Quarter Midget racer uses fiberglass arrow shafts as spars for simple wing construction. Built-up fuselage. Complete with all QM racing rules; by Don Panek. (August, 1973, AAM) \$3.75

0442/MISSY DARA—QM with high scale fidelity. Integral wing/fuse construction uses foam cores. Either front or rear rotor 15 engine. Designer: Loren Jacobson. (April, 1974, AAM) \$3.00

0813/POGO—Model of Owl Racer for Formula I features mid-wing, low stab, non-cheeked cowl. Very stable and plenty fast. By Bob Morse. 40 racing engine and four-function radio. (August, 1971, AAM) \$3.50

SAILPLANES

0152/TONY—RC slope aerobatic model is a spin-off from CL profile designs. Pattern-type performance with three-channel equipment. Can also be flown from hi-start or winch. One-piece construction, 49" span. Designer: Denson, Faure. (January, 1975, AAM) \$5.75

1041/ECLIPSE—RC Saliplane. The biggest soarer yet, this 16-footer is designed for maximum duration flying and cross-country records. Geodetic wing and V-tail on a fishing pole fiberglass boom. Two huge plan sheets with complete building data. Three-function radio required. Designer: Hal Cover. (October, 1974, AAM) \$4.75

1202/KING KONG—Huge flatland soarer for competition use has 12 ft. wing of glass, foam, and balsa. By Dick Sarpolus. One of the first "mammoth" sailplanes. Its slope soaring potentials are staggering. (December, 1970, AAM) \$3.25

1012/PEREGRINE—All-out RC slope soaring racer with ailerons and elevator. V-tail, laminar airfoil wing, aerobatic, too. Balsa fuselage with foam wing. Capable of speeds in excess of 80 mph. Bricks or two servos. Designer: Bob Andris. (October, 1971, AAM) \$3.50

0241/NEBULA—Dick Sarpolus' unique RC sailplane can be built with polyhedral or dihedral and optional flap system. All-balsa fuse, sheathed foam core wings. All-moving tail. Plug-in panels. (February, 1974, AAM) \$5.00

BEGINNERS CL PACKAGE

0231/MUSTUNT I—Primary profile fuselage, upright .35 engine, thick airfoil stunt trainer. By Al Rabe. (February, 1973, AAM) \$2.25

0232/MUSTUNT II—Advanced stunt trainer, same aerodynamics as Mustunt I, but fully shaped fuselage and upright .35 engine. Capable of winning any meet. Designer: Al Rabe. (February, 1973, AAM) \$2.75

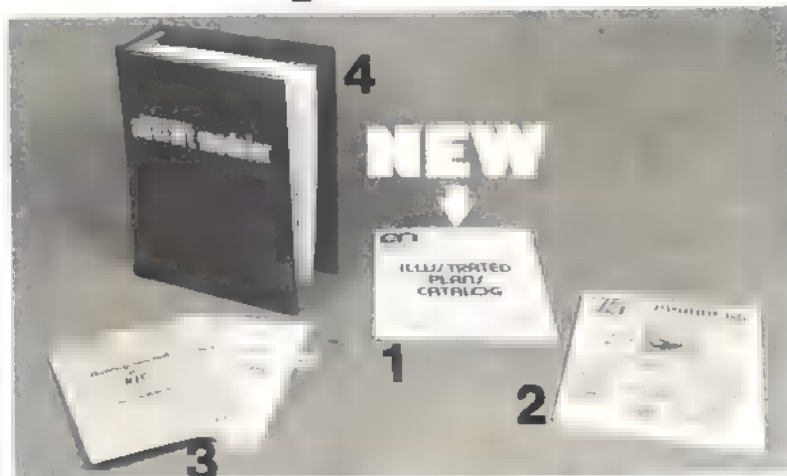
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ISSUES / (Continued from page 85)

event like the AerOlympics cannot be underestimated. How did the media react to this multiple-event World Competition? Three of the six U.S. magazines released some sort of story in their October issues. **AAM** gave a complete, 11-plus-page full contest report (excluding Indoor coverage), with 36 photos and 106" of copy.

An East Coast magazine kept up with **AAM's** schedule, releasing a 40-photo, eight-page story; but it offered only 34" of copy (that included Indoor coverage and the Society of Antique Modelers). The other East Coast magazine (check which one yourself to avoid confusion) surprisingly had nothing on the AerOlympics except some "ramblings" interspersed in the monthly Editorial. This same magazine then released a photo-only article (32 photos) in the November issue, stating that much already had been written about the '74 AerOlympics, and they felt that a photo article would tell the story in greater depth (they ran four fewer photos than **AAM** and eight less than the other magazine). This same magazine gave six pages to Soaring at the AerOlympics—one wonders why, since this was only a provisional event.

Having examined the scope of coverage, let's now pursue the depth and quality. The way any two reporters view and cover an event will vary as much as the way they drink their coffee. Some like it all milk and sugar, and others go for the full taste of a straight cup. Were one to read the AerOlympics reports in all the U.S. mags that covered it, it came off with the usual hyperbole of biggest and best, great weather, fine site, etc., *ad infinitum, ad nauseum*. **AAM**, while not quite as Pollyanna-ish about the whole thing, started off its report: "As with most contests, the AerOlympics started out in a mood of...seeming uncoordination."

*The reader should be cautioned that these comparisons are not intended to be condemnations of the other magazines. We don't have to stoop to conquer, but we must make our point from the most valid approach, i.e., statistics and facts. The other magazines scoop **AAM** as often as not, and the amount of space they allot to a story should be less, since they have fewer total pages.

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The European press was not ■ munificent in its praise. As the Palm Beach Aeronauts reported in their October newsletter:

"We are beginning to get the overseas reaction to the recently held AerOlympics and World Scale Contest. It is always interesting to learn how we, in the U.S.A., appear in foreign eyes. The Lakehurst Naval Air Station was found to be huge, but disappointingly run-down, with Spartan accommodations and long distances to be hiked in the hot sun. At the start of the meet, there was zero organization, but by the time the static judging had been nearly completed, American on-the-spot innovation had turned the event into a model World Class spectacle."

What the American press saw as the best site ever, etc., one English magazine reported thusly:

"The Naval Air Station is in that demoralizing state of being 'run-down'... and was thus able to provide hangarage and H.Q. rooms for the AMA, albeit unprepared for the demands on either accommodations or even planning... on the fifth day after arrival, everything had clicked into place and what was initially a shambles that had all the Europeans chuntering, became ■ World Class spectacle."

Their pylon report went on to call processing "a hilarious experience," and noted that "the organizational side was seriously undermanned."

The soaring report in this same journal noted that "some differences arose with the organizers" and concluded that "the event was in some ways disappointing."

The other prime British magazine reaffirms this:

"...a commendably large area of dilapidated airfield promised ideal facilities. Alas, we were to be disillusioned."

"This was, at the outset, the most impromptu set of events ever seen. Moreover, the Spartan accommodation was unfavourably compared with that of any European Army/Navy, the temperature and humidity reached levels that were higher than the 90° forecasts, and

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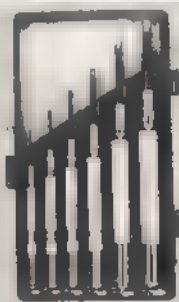
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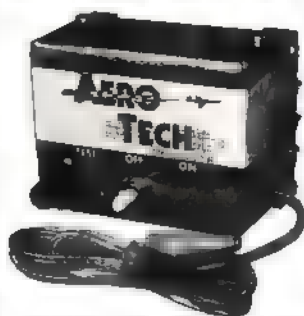
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(Continued on page 90)

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the geographical spacing of HQ, Mess, Billet and Hangar were such that those without a car were faced with a daily assault-course walk to the contest. But what disturbed most was the evident lack of pre-planning and the dependence of the 50,000 AMA membership on just one or two of the HQ staff. As the week progressed, one began to appreciate that where we pre-delegate, Americans improvise."

This same magazine's Scale report stated:

"The pros and cons of holding such a combined meeting will, doubtless, be the subject of debate, in the light of detracting from the solo importance of the World Championship categories staged, and the administrative and organisational problems resulting from such an ambitious programme. Certainly the AMA did not give the impression that they were totally in control at all times. A further question to ask of this particular meeting, was whether it could be called a truly representative championship. Without in any way wishing to detract from the achievement of those competitors who attended, in the British case, almost entirely at their own expense, there remains a feeling that, had the event been staged in Europe, the participation would have been far more representative and led to a more closely contested event."

Last the reader misconstrue this point of view held by only one faction at the AerOlympics, note that the Canadian press reported that:

"The team arrived in Lakehurst to meet the usual, but unexpected, confusion of quartering..."

"Next was the problem of practice flying...Two short sessions were finally given on...Thursday, but this wasn't enough..."

"...To start flying, the rules require a dummy run by a non-competitor to give the judges a practice round. This had been overlooked and there wasn't a non-competitor available."

One can only conclude that Mr. Fraher wasn't speaking empty words about the American modeling press' approach to reporting events. However,

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I'm sure that Mr. Fraher would even agree that our hobby has much to be proud of, and that the press, including **AAM**, is never hesitant to give due credit. Our sport is one of enjoyment and fun, and our magazines are always the first to reflect this mood—this is a healthy and positive position, but one that easily can be overdone.

This matter takes on further implication, especially for **AAM**, when viewed in the light of our November Editorial on the NATS (see "The Bayou Blues," page 8). I have received innumerable letters, both pro and con, on this essay. Not surprisingly, most of the letters fell into one of two camps. One generally propounded the theme that, while the letter-writer hadn't attended the NATS, how dare **AAM** print such lies and untruths (and even if it were true, you shouldn't point a finger—that's not nice).* The other half of the pile was from people who had attended the contest and appreciated **AAM's** honesty in writing it the way it was.

Again, we find a situation where the NATS has received only the highest accolades from the press. **AAM's** NATS coverage (all 21 pages of it) told the story from 11 points of view, totally independent of my Editorial (**AAM's** writers write what they want to say, not what the Editor tells them). Anyone who thought that Don Lowe had a good time, or that Dougherty or Dick Mathis were impressed with the events and turnout would really have to have read those reports with one eye closed.

Let's turn again to the newsletters for further info. The *Pilot's Log* came out with an Editorial that made mine seem like a cherries jubilee of praise and happiness over the NATS. The *Dallas RC Club Newsletter* reported that "Lake Charles was really hot and the humidity was a killer."

The *Palm Beach Aeronauts Newsletter* tells the tale of two fliers, one who flew in NATS Scale, while a fellow club member was departing to watch the same event at the same time that the first contestant was arriving home from Lake Charles. The flier who missed seeing Scale, because of last minute rescheduling reports of:

*To date, only one letter-writer who had actually been to the NATS came out against this Editorial.

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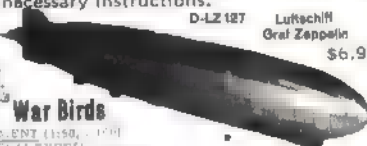
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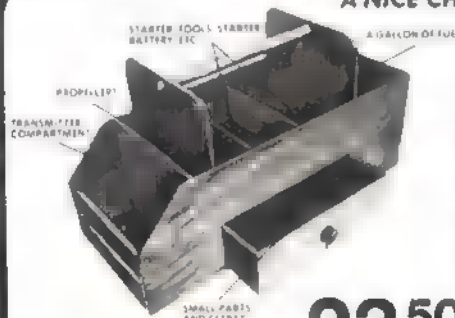
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"...one fellow who had a model shipped in and was prepared to fly on the published date but, of course, the event was finished and the trophies awarded. As a token, some judges were produced and the model judged, but it was only a gesture. This individual was not just perturbed, he was extremely disappointed and angry and was prepared to carry his case to AMA headquarters. Surely there were others, and we probably will hear more about this situation in the future."

I have reported extensively from newsletters because, having been a club newsletter Editor myself, I can appreciate the forthright approach these monthly mailings take toward an issue. I have tried to retain this factual approach in my Editorship of AAM. Furthermore, these are a good index of what the grass roots feelings of the fliers are toward a given topic. They are, unfortunately, all too often the only honest source of relevant and truthful reportage.

One newsletter account that really floored me was *Competition Canada*, the northern counterpart of our *Competition Newsletter*. Their own Canadian Nats coincided with the AMA NATS, and it was startling to learn that "Modellers (sic) from as far away as... Tennessee and Florida" to fly. These fliers traveled farther to attend the Canadian Nats, actually coming from states in proximity to Louisiana! I counted over a dozen names of AMAers in the Canadian winners' list alone. At least we know where the guys flew who weren't in Lake Charles.

There was even a Letter to the Editor praising the relaxed and enjoyable atmosphere of the Canadian Nats, and offering a vote of confidence that this flier would return next year. He even asked to join the Canadian AMA (MAAC)! The writer is an AMA member from Michigan. How many Canadians flew at Lake Charles?

I am not here to defend my November Editorial, since I did my job as a reporter and I called it as I saw it. Rather, I wish to bring forth the fact that AAM doesn't fall into the "paragons of inefficiency" and Pollyanna self-praise category of model magazines which Mr. Fraher justifiably decries.

(Continued on page 101)

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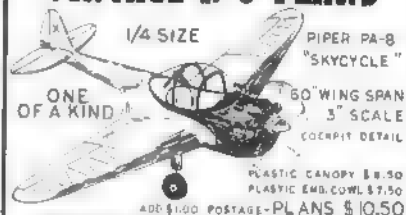
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Hall of Fame Honors Five

With a number of excellent candidates to be considered, the matter of which five should receive this highest of honors was no simple matter. But the Council of Past AMA Presidents buckled down to the job and elected five men to be added to the Model Aviation Hall of Fame for 1974. Those named:

William L. (Bill) Brown, 4th
William R. (Bill) Enyart (deceased)
Irwin S. Polk
Nathan Polk
Sal Taibi

We are going to tell you something about these men and how they earned their niche in modeling history, but first a few words concerning how the Model Aviation Hall of Fame was started and how it presently is operating.

This program of recognizing those who have made outstanding contributions to aeromodeling over many years was initiated in 1969 under joint sponsorship of the Washington State Air National Guard and the Academy of Model Aeronautics.

Under this arrangement six awards were made in 1969 and three in 1970—to Walt Billett (deceased), Willis Brown, Carl Goldberg, Walt Good, Charles Grant, Jim Walker (deceased) and Frank Zaic ■ 1969; to Dick Korda, Al Lewis (deceased) and Bill Winter in 1970.

No enrollments in the Hall of Fame were made in 1971 because the State of Washington was unable to continue, and AMA was not ready to go it alone. However, awards to Howard McEntee (deceased) in 1972 and to Ocie Randall (deceased) in 1973 were approved ■ ■ interim basis while exploring ways and means to reactivate the program on a larger scale and on a regular basis. The main difficulty was in finding someone interested in chairing the program and working out new procedures.

Walt Good, himself a member of the Model Aviation Hall of Fame, agreed to take on the responsibility, and he put together the details of the current program which accompanies this article. The program then was approved by the AMA

president who acted on behalf of the Executive Council which previously had approved the basic concept of using AMA's past presidents for award selection.

The Council of Past AMA Presidents is uniquely qualified to serve as the selection committee comprised both of aeromodeling pioneers and present-day leaders. This assures that old-timers will not be forgotten and also that currently deserving candidates are not neglected. In other words, the Hall of Fame will consider candidates of all ages and from all periods of activity.

Reading like a Who's Who of Model Aviation, most members of the Council of Past AMA Presidents could, themselves, qualify for the Hall of Fame (three already have been so honored). But this group acts only on nominations from other sources; no member may nominate himself. The past AMA presidents are as follows, with the years of service indicated.

Willis C. Brown, 1936-37; Albert L. Lewis (deceased), 1938; Edward Roberts, 1939-42; Irwin G. Ohlsson, 1943-46;

National Hobby Month, October, was celebrated in many different ways and by a wide range of organizations. AMA's display at the Pentagon benefited from members and models from three Washington area clubs: Northern Virginia RC, Fairfax Model Assn., and Ft. Belvoir Flyers. In photo by John Preston, Walter Zaharevitz and Phil Veatch (third and fourth from left) are pointing out interesting details of Roscoe Hibbard's Nieuport to several of the Pentagon's military men. Zaharevitz is a member of the AMA HQ staff; Veatch is president of the NVRCC. During the two-day display, several thousand ■ by the AMA booth to see about ■ models which ■ displayed on a rotating basis.





Everett N. Angus (deceased), 1947; C. O. Wright, 1948-49; Kenneth G. Heid, 1950-51; Frank B. Bushey, 1952; Keith H. Storey, 1953-56; Claude McCullough, 1957; Dr. Walter A. Good, 1958-60; Peter J. Sotich, 1961-62; John Worth, 1963; Maynard L. Hill, 1964; Howard E. Johnson, 1965-66; Clifford G. Weirick, 1967-68; John E. Patton, 1969-70; John E. Clemens, incumbent.

Bill Brown holds one of his first handmade engines, right, from 1930, and one of the Brown Juniors from the first production run.



Bill Brown, Pine Grove Mills, Pa., had an impact on the world of aeromodeling that is eloquently stated in an article by Charles H. Grant that appeared in the May 1948 *Air Trails Pictorial*:

"...An undercurrent of excitement seemed to possess huddled groups of young men dotting the field. Along the northern boundary flimsy winged craft battled upward against the breeze in strange silence. The 1932 National Model Plane Competition was in full swing with neither contestants or spectators prepared for the momentous event about to take place.

"A roar suddenly burst from a huddled group, and the crowd surged apart to make way for a slim, curly-haired youth with a weird craft grasped in his arms.

"A miniature gasoline motor swirled a slim propeller at invisible speed, while an awed silence gripped the crowd. The young man quickly proceeded to a nearby runway and released his craft which leapt forward and skyward at tremendous speed, its motor roaring like a combined orchestra of a thousand hornets. Even as the small craft spiraled swiftly upward,

Bill Enyart was a friend to aeromodeling as well as full-scale sporting aviation. He met his death while officiating a record attempt.



spectators failed to realize the significance of the occasion. This was the first successful gasoline-powered model airplane ever to fly in a competition in this country. Nearly everyone who witnessed the preparation of this little plane for flight considered it to be merely another gadget. Nothing could have been further from the truth, however, for the motor delivered uninterrupted power until the plane was nearly lost to sight at an altitude of over 2,000 feet.

"After its builder, Maxwell Bassett, of Philadelphia, had made one flight after another with his little craft the realization gradually came to the other contestants that they might as well pack up their rubber-powered models and go home. At that time flying rules allowed any type of power to be used without separate classification. Not only did this model practically stop the 1932 contest, it also changed the whole import of model airplane flying in a few minutes. . . ."

Bill Brown was the designer and creator of this little engine. His was the genius which made Bassett's performance possible and revolutionized American modeling.

Brown, now 63, built his first engines in 1930—one at home with his dad's machine tools and another as a shop project in high school. Soon the Brown Junior Motor Company was formed, and 1934 mass production of Bill Brown's engine put this new power source within reach of the day's modelers, and through attendant publicity about this amazing device, many thousands of people were introduced to the activity. Today, the Brown Junior is one of the standards for any comprehensive antique engine collection.

During the WW II years, Brown invented and patented the reciprocating CO₂ engine which, in 1946, he licensed Herkimer Tool & Model Works to produce as the OK CO₂. He formed his own Campus Industries in 1947 which produced smaller CO₂ engines and also, in about 1950, the Campus .29 glow engine. He still is producing CO₂ engines, presently under the firm name of Brown Junior Motors, Inc.

William R. Enyart (deceased) was an early full-scale aviation leader who saw the worth of aeromodeling and had the drive, skill and finesse to consolidate varied interests and to unite them into the Academy of Model Aeronautics, which emerged.

The National Aeronautic Association, since formation in 1922, had advocated, prompted and sanctioned model competitions as well as those for full-scale aviation. The NAA had its own Junior Division and later established the Air Youth of America—both under Enyart's tutelage—and he was the spark plug who subsequently negotiated the affiliation of AMA as a division of NAA.

Enyart's affiliation with the National Aeronautic Association started in 1931, when he became secretary, editor and assistant general manager. During the period 1931-1941, he was vice-chairman of NAA's Contest Board. In 1933 he served as the first chairman of the Model Airplane Committee under the NAA Contest Board, certifying to all model airplane records and issuing the certificates just as he did for full-scale aviation records.

Enyart believed heart and soul in the value of model aviation to the youth of America. He was a natural promoter, and had a finesse to his work that left an indelible imprint of his name. As a senior aviation figure, he aided in setting up AMA as an operational national organization, helped early AMA leaders to successfully fight state bans on gas models, and encouraged NACA (now NASA) to hire model builders.

During his lifetime, Enyart served both in salaried and non-salaried positions with NAA, including president and chairman of the Board of Directors. He also was vice-president and then president of the Federation Aeronautique Internationale. At his death, he was president of Simmonds Aerocessories.

Thirty years of outstanding service and achievement in the field of aeronautics met with a tragic end in 1958 when Enyart was killed in the crash of an Air Force KC-135 Stratotanker taking off on an attempted record non-stop round trip between New York and London. At the time of the crash, he was representing the NAA and FAI as observer and timer of the record attempt. He died at the age of 56, thus serving two organizations which he had been closely identified and to which he had rendered countless services during most of his adult life.

Sal Taibi, Lakewood, Calif., has been an influential designer and flyer of Free Flight models since the late thirties and continuously to this very day and likely to for many years in the future. Now at age 54, he is retired from Federal Civil Service, and presently is a partner



Sal Taibi at the 1941 Nats poses with his famous Pacer—an early cowled FF design.



in Competition Models, a company which produces a number of his FF designs in kit form. Models built from these kits often find their way to the winners' circle.

Taibi started his modeling career in 1934 when a school chum gave him a kit for a rubber-powered Bellanca Monoplane. From this he progressed to contest-type rubber models. In 1936 he built a 7'4" Buccaneer (kit by Berkeley Models) which was powered by a Brown Junior. He got plenty of experience in N.Y.-N.J.-Pa. contests from 1936 to 1938, "but couldn't win a darn thing." He designed the Powerhouse (Forster 99-powered) in late 1938, which turned his luck on the contest trail. From then on, his name appeared frequently in the lists of winners—up to and including the 1974 National Contest where he won first in Open Class C FF Gas.

Many of Sal's Free Flight designs have been printed in the various model magazines and/or produced in kit form: Powerhouse, Hornet, Pacer (both B and C versions), Brooklyn Dodger, Winged Yankee, Meteor (in conjunction with C. H. Grant), Cadet, Zenith, Comet, 1/2A Spacer, A-B Spacer, Starbuster, 1/2A Starduster (and versions X, 350, 900), and collaborated with Woody Gregory on the 600), Sky-Streak, Orbiteer (in collaboration with Dennis Bronce).

Taibi was one of the many modelers who went to work for NACA at Langley Field in 1941. Thus his contest activity shifted to Va.-W.Va.-D.C. until 1944, when U.S. Air Force service took him to Bavaria in Germany with the Occupation Forces. There, he built a Forster 29-powered "pencil bomber" (slim fuselage with high pylon) which made the longest flight of any of his models that he can recall—over 70 minutes, with landing just a quarter mile from where it was launched! Following military service Taibi moved to Indiana, and there he applied for an AMA Contest Director license. He ran many meets in Indiana and still more in California following his move to Lakewood in 1951—including being the top man in the organizational structure for the National Contests of 1952 and 1955.

The Polk brothers in 1938 arranged for a technical symposium in New York which was attended by many early pioneers—a number of whom are leaders today. First row: Phil Tell, Carl Goldberg, Ed Roberts, Irwin Polk, Al Lewis, Walton Grubbs. Second row: Victor Fritz, Phil Papoon, Joe Kovel, Robert Hammer, Louis Garami, unidentified, Leon Shulman. Third row: Henry Struck, Walter Berry, Nathan Polk, unidentified.



Sal Taibi rigging 1/2A Orbiteer dethermalizer for official flight at the 1974 National Meet.

The Polk Brothers, Irwin and Nathan, New York, N.Y., between them have made notable contributions to modeling, including many "firsts." Among them:

Conducting a model plane column in a daily newspaper (Newark, N.J., *Evening News*, 1926).

Organizing the first large department store aero league (Bamberger Aero Club, 4,000 members, 1926).

Setting up a sizable hobby shop in a major department store (Bamberger's, Newark, 1926).

Directing the 1932 and 1936 through 1939 National Championships and the 1941 International Lord Wakefield Cup Competition, plus all the early Eastern States Model Meets.

Interesting the National Exchange Club in supporting model aviation and also auto makers (which were brought in as part sponsors for the National Meet).

Conducting the Junior Birdmen of America Institute; playing a vital part in the organization of the AMA, the International Gas Model Airplane Assn. (IGMAA) and the Metropolitan Model League.

Editing an early model magazine (*Model Aircraft Builder*, 1935); editing an aviation newssheet (*Contact*).

Running the first all-gas model meet (Caldwell, N.J., 1935) and also the first contest with limited engine run for gas entries.

Laid the groundwork for the model-hobby trade association; set up the first model industry trade show; served as the first manufacturers' traveling sales rep for the trade; introduced Jetex power to America.

Lent enthusiastic support and innumerable hours to every worthwhile pro-hobby program that has come along.

Irwin, elder of the two by 18 months, now 61, recalls that Bamberger Club members built Baby ROG models in the mornings and held meetings in the afternoons. With most of the members new to modeling, much help was



Above: Irwin Polk with an early "Mighty Atom" CL plane. Below: Nat Polk doles out fuel (per plane's weight) in 1937 FF meet.





needed with the little rubber-powered models, and Irv was their teacher. He, himself, had considerable prowess in the days when the models were built from pine and bass wood, but the delicacy of microfilm-covered duration models got him down; that's when he turned to promotion and leadership to keep close to his hobby.

Among the many large meets Irv directed was the famous depression Nats of 1932 (Atlantic City) at which Maxwell Bassett forced a revolution in competition rules by flying his plane with Bill Brown's gas engine. In the following year Irv organized an RC team among the department store's membership; the big plane they built flew very nicely, but never under really successful radio control.

Looking for an even bigger field in which to promote modeling, Irv left Bamberger's to go with Hearst newspapers to work with the Junior Birdmen organization. At this point younger brother Nathan took over at Bamberger's and ran the club for several years before opening his own hobby shop.

While he was editor of *Model Aircraft Builder* (the magazine folded because of the publisher's financial difficulties with other magazines), Irv also opened a hobby shop which was operated for a time by his wife. Then Nat closed his store and joined Irv. With business being good, they soon needed more space; just before WW II the Polks moved to New York's 5th Avenue where they have operated as Polk's Model Craft Hobbies for many years.

The Polks were very active in the formation of both the AMA and the Hobby Industry Association of America (HIAA). Irv, especially, made many trips to Washington to work with the National Aeronautic Assn. and Bill Enyart



Polk's 25th year celebration, when this photo was taken, was in 1961. Nathan, the younger of the two, stands behind Irwin.

in seeking more recognition of aeromodeling by full-scale aviation interests. With the setting up of AMA as a division of NAA, their efforts bore fruit. And the Polks also aided AMA in the early days by turning over the insurance and licensing programs which the International Gas Model Airplane Assn., organized by Nat, had originally developed.

The Polks, Irv and Nat, are still promoting to this very day—and not just for themselves including a recent appearance on the Sunday morning TV show, *Wonderama*, seen in many cities.

1975 Program for 1976 Scale World Championships Teams

Some details are still to be decided, but the 1976 World Championship Scale Teams will be picked at the 1975 National Model Airplane Championships (tentatively Lake Charles, La., August 4-10). Six AMA members—three for Radio Control and three for Control Line—will be chosen from among Nats contestants in the Scale events who register in the Team Selection Program. A Program entry fee of \$10.00 will be collected at the Nats when models are left for judging; no other pre-registration is necessary.

A team candidate is also required to have an FAI stamp on his AMA license before flying at the Nats. Program entry fees go directly to the teams to help offset travel costs to and from the World Championships. It is hoped, therefore, that those concerned will support the program by entering—it's a worthy cause.

Note: models meeting either AMA or FAI rules may be entered in the Nats; either will be considered for team selection. But anyone who enters a model which does not meet FAI rules, and wins a place on the team, will be required to build a model which complies with FAI rules before being finally accepted as a team member. Yet to be determined is whether the Nats events will be flown and judged in accordance with AMA or FAI rules; this decision is expected to be made at the Nats Planning Conference in early February.

Meanwhile, for those who intend to enter models which will also be suitable for World Championships competition, attention is called to FAI weight and loading requirements which are somewhat more restrictive than those for AMA rules: weight of model, *with fuel*, must not exceed 11 pounds. Exception, CL only: multi-engine models must not exceed 15 lbs., 6 oz. (no extra weight allowance for multi-engine RC models). Maximum surface loading (wing and tail area combined): for CL, 49.14 oz. per sq. ft.; for RC, 32.76 oz. per sq. ft. Note: surface area takes into account that area contained within the normal contours of the flight surfaces (wing and tail) extended so as to meet the plane of symmetry of the model (projection into fuselage, for example). Max engine sizes: CL, .61 cu. in., except that multi-engine models may use up to 1.22 cu. in. total; RC, .61 cu. in. for either single or multi-engine models.

In case FAI rules are used at the Nats, instead of AMA rules, they include such differences as changed scale factor/flight score relationship, K factors, complexity scoring, maneuver changes.

The Model Aviation Hall of Fame

Purpose: The Model Aviation Hall of Fame has been established to recognize aeromodelers who have made outstanding contributions to model aviation over the years, their contributions having improved the hobby and increased its prestige and stature. Each year several modelers are selected as members of the Model Aviation Hall of Fame. The selection is based on the individual's contributions to model aviation as a competitor, designer, experimenter, leader, organizer, Contest Director, writer, publisher, manufacturer—and other related activities. The emphasis is on the accumulated contribution in one or more of these categories over a period of years. The program is operated by the Academy of Model Aeronautics and by the Hall of Fame Selection Committee, which is the Council of Past AMA Presidents, whose accumulated knowledge of American aeromodeling and aeromodelers is unparalleled.

Eligibility: A person is eligible for nomination to the Hall of Fame if he is:

1. A modeler who has made the kinds of contributions listed above.
2. A U.S. citizen.
3. An AMA or non-AMA member.
4. Living or deceased.
5. Nominated by the submission of a nomination form by a sponsor who knows of his contributions.

Mechanism of Nomination: A sponsor should submit a nomination form to AMA HQ—Model Aviation Hall of Fame prior to April 30, 1975. Forms are available from AMA HQ. Nominations may be submitted by any person, club or organization in the U.S.A.

Selection: 1. Each year the Hall of Fame Committee, composed of the Council of Past AMA Presidents, will select five Hall of Fame recipients from the nominations which have been submitted. At least three of the recipients must be living.

2. Announcements and presentations of the Hall of Fame Awards will be made at appropriate model aviation occasions during the remainder of the year.



Positively Speaking

PRESIDENT'S MEMO

With a membership of over 50,000 persons, the Academy of Model Aeronautics has established itself as one of the most dynamic and progressive organizations in all of the sports and aviation worlds. Probably the most identifiable reason for AMA's fantastic growth and increase in services can be covered by a single word: **positiveness!** We have positive decisions and actions from AMA's leaders, and a fine positive attitude on the part of the entire membership. I think I can put this positiveness into understandable words. Please let me try.

First, let me try to put my own definition to "positiveness." In my mind, **"positiveness is the realization that something can be improved—and the daring to try!"**

All of AMA's leaders must believe deeply in this. If they didn't, they would simply not volunteer their services. And AMA is directed or run almost entirely on volunteer effort, with only a relatively small handful of non-volunteer professionals working for a salary in the AMA HQ office in Washington. These people, too, believe in positiveness—and believe that AMA affords them the chance to express this. Otherwise, they would probably seek employment elsewhere.

As I mentioned, the multitude of volunteer workers in the AMA ranks is actually a gigantic expression of belief in the positive attitude. By my definition of positiveness, these people have realized that, by banding together and investing of themselves, they could improve the pleasure and stability of their surroundings through their chosen recreation of sport aviation. The act of volunteering shows that each one was daring enough to offer his services on a donated basis in the belief of the positive approach. The volunteering itself, in such numbers, is an overwhelming endorsement in the positive path.

Just who are the volunteers in AMA? There are hundreds, and all wanting to pitch in and move forward toward a goal of more fun. Their numbers start at the top, with the AMA president, and include the secretary-treasurer and the 11 district vice-presidents. This is the actual steering group, the Executive Council. Other high-level volunteers include some four or five associate vice-presidents from each of the AMA districts. Also anxious to aid in positiveness and improvement are the very dedicated folks who make AMA's competition rules. These are the volunteer Contest Board members, one from each dis-



AMA President John Clemens.

trict in each of the AMA activity categories. These Contest Board members are such believers in the progressive approach that they continue to volunteer, many for a number of years, realizing full well that there is no way they can please everyone and become "heroes." They see AMA and its services as a great thing and make a tremendous contribution by establishing performance guidelines and safety standards to aim our path in a very positive way.

And who could have a more positive attitude than that great group of AMA "unsung hero" volunteers, the hundreds of Contest Directors? If they didn't believe in positiveness, they certainly would never have "taken one step forward" to volunteer to solve the complex problems of competition direction. It takes a special kind of person to risk having to make unpopular decisions and face excited and unhappy contestants.

More positiveness? Consider club officers, program directors, site providers, sponsors, donors, and the like. And let's certainly not forget the folks who keep us informed and talking to one another, the blessed newsletter editors. This should bring us down to the most important individual of all, Mr. Joe Member! Joe Member is the guy who pays his dues to provide the financing that makes the entire venture possible. His contribution of monies is certainly a positive action and backs up his belief in the AMA principle as a good thing and worth his investment.

But, as in any society, there are always some who make no contribution except to criticize. These are the negative people. I feel sure that in the "Great Plan" these negative people were scattered among us to keep the rest of us cautious and on our toes. They actually do render a service with dedication in pointing out our mistakes—most of which we are already well aware, because we already are living with them. These negative people, or critics, only perform a true service if they suggest

better alternatives or solutions to our problems. Without a valid suggestion of improvement, their nit-picking is a nuisance which accomplishes nothing but the slowing up of other peoples' dedicated effort. This is an irritating and serious loss which can easily bring the dedicated volunteer to the brink of saying "Chuck it!"

Negative people are the ones who, when the rest of us are out behind the car pushing, sit inside where it is comfortable, putting on the brakes. Our District IX vice-president, Stan Chilton, says that "negativism is mountain climbing over mole hills, getting us nowhere, and creating ulcers!" And on negativism Mark Twain said, "The man with a new idea is a crank until the idea succeeds!" And Johnny Clemens says, "You will never know if it would have worked if you haven't tried." And the profit from this comes when you find that you have made a wrong turn and realize you need a better path.

Negativism without offering the solution or a better alternative is not progressive, and it usually multiplies the original problem. Over-reacting negatively is sort of like beating a dead horse. All the beating in the world won't make him get up and run again, and it will probably wear out the beater and make him ineffective, too. I was guilty of exactly this the other morning when I had a tire blow out. I stood there, hands on hips, "talking" in very rude and profane language to the collapsed tire. It did absolutely no good! My problem didn't improve until I took the positive action, the better idea, and took the wheel and tire to a repair shop. I had wasted a lot of time cursing!

Of course the extreme in negativeness is expressed when the negative "expert" gains access to a printing press to aid him in making still higher mountains out of mole hills and in punishing those who have made bad decisions, regardless of their free services and good intentions. Giving these critics access to a printing device is often like passing out machine guns in an asylum. They get over excited. Their ability to say "I told you so!" comes only through hindsight, and after the fact. If they had foresight, they would be the leaders and be making contributions to progress instead of impeding the progress of others.

I so admire the positive spirit that AMA is built on that I want to compliment the entire membership for the image it is creating. As the AMA president, I pledge my services to be positive to the limit of my strength and wisdom. Let us, together, use a positive viewpoint in daring to create a future of progress and pleasure in what might be a more grim world without us!

John E. Clemens
AMA President

The SSRCC at Summerfest 1974

The SSRCC urges all model clubs to seek out any public event in which the hobby can be presented for what it is: the greatest sport/hobby in the USA today!

By Warren G. Shadrick
SSRCC President

Summerfest, an exposition of arts and crafts, leisure-time activities (including all kinds of hobbies and sports), antique displays and old-time flea markets, was sponsored for the fourth consecutive year by the city of Brockton, Mass., last summer. The purpose of this annual event, presented through the Community Schools Program, is to present to area residents a diversified collection of ways in which man spends his non-working hours. The three-day event ran from 9 am to 11 pm each day and was estimated to have attracted over 100,000 visitors.

For the fourth year, too, the AMA chartered South Shore Radio Control Club contributed a static display and flying demonstration. The static show on Saturday at Brockton High School included a full range of RC supplies from a completely disassembled Enya 35, to adhesives and covering materials, to kits and plans available for inspection. The intent was to have on hand just about everything an RC'er would use from the time he purchased a kit until he put the model into the air.

Helping to enhance the image of our hobby were Paul Wittenberg (AMA 97237) demonstrating his Top Flite P-51D with operating flaps and retractable land-

ing gear; Samuel Frey (AMA 9407) with his Valkyrie B-70 bomber; and Warren Shadrick (AMA 1526) showing his Quickie "500" and Lanier Jester. Also on hand to field questions were John Sullivan (AMA 51471), Dr. John Spillane (AMA 59163) and Harry Fake (AMA 15015). SSRCC members were kept busy for the entire day answering enquiries and explaining the workings of the display items. Many persons were intently interested in the construction and finishing techniques used, and almost everyone of the several hundred visitors showed a keen interest in how the radio control system worked. Gary Garabian (AMA 51542) who runs G & G Electronics, the officially authorized Kraft repair center for the eastern U.S., brought an oscilloscope, a frequency counter and the exposed workings of a Kraft radio system (TX, RX and servo). He explained in de-

John Nicolaci flew his Kalt helicopter frequently as a fill-in to keep the action at a fast pace—important for holding a crowd's attention. Harry Boyajian photo.



tail the functioning of the modern digital system.

On Sunday at the Brockton H.S. football field the club presented a flying demonstration which featured dogfights between the "Red Baron" and his adversaries as the central theme. The Red Baron (Warren Shadrick) flew his original design Fokker D-7; rivals Robert Brodeur (AMA 62046) and Samuel Frey flew Rumplestadt bipes built from RCM plans. The Red Baron triumphed, suffering only one cut on his crepe paper streamer. Three dogfights were flown, and the crowd loved every minute. In addition, Gary Garabian demonstrated the AMA Class C Expert Pattern with his Quickie "500." John Duffy (AMA 10433) did some low aerobatic stunts with his CG Cessna 172; and Raymond Fallona (AMA 50265) flew his Rumplestadt biplane. Between each flight John Nicolaci (AMA



Author Warren Shadrick, above, flew his scratch-built Fokker D-7 (photographed by Dr. John Spillane) as the Red Baron against adversaries Samuel Frey (shown at left in photo by Harry Boyajian) and Robert Brodeur. Both the latter flew Rumplestadt Bipes. Photo by Stanley Bauman in top right of adjacent page shows near pass during dogfight.



27183) flew his Kalt helicopter; with winds in the vicinity of 20 knots that day, he did a remarkable job of keeping the Kalt airborne. Announcer John Sullivan used a portable PA system supplied by the local CAP chapter to tell the crowd what was happening while other SSRCC members were kept busy explaining how things worked to the several hundred spectators. Following each demonstration the appreciative crowd applauded with approval.

The South Shore Radio Control Club is proud to be an active participant in enhancing the image of our sport/hobby through public demonstrations. The club has been asked already to return for the 1975 Summerfest, and to expand participation to cover the entire three days.

Special thanks are extended to Mrs. Roberta Karp, coordinator for the Summerfest activities. The SSRCC received complete and inexhaustible support from the Summerfest personnel, and much publicity resulted. It was a most enjoyable demonstration, and the club looks forward to repeat performances in coming years.

The club has, in the past few years, put on flying demonstrations at various air shows in eastern New England, and has received excellent local support and newspaper coverage. We like to feel that through these efforts this fabulous hobby is being presented in a far more favorable light than that of the "man with toy airplane." The SSRCC flying field is jammed each Sunday (especially at contests) throughout the summer season by scores



of interested spectators—many of whom have become SSRCC members!

Six Receive AMA Scholarships

Based upon a recommendation of the AMA Scholarship Committee, the Executive Council (AMA's board of directors) has approved awarding of scholarships totaling \$4,000 for 1973-74 to six young AMA members, as follows.

Donald Edberg, Covina, Calif. \$1,000
Allen Swanson, Nashville, Tenn., \$1,000
Curtis Pfarr, Tacoma, Wash., \$750
Ramon Torres, Hialeah, Fla., \$500
Lell Barnes III, N. Caldwell, N.J., \$500
Joseph Rotunda, Vero Beach, Fla., \$250

Council approval was based upon recommendations of the Scholarship Committee, chaired by Bob Stalick, Albany, Ore., which considered grade average, class ranking, national test results, school and community leadership activities, and model contest performance. Named as alternates were Randal Smith, Seattle, Wash., and Tom Sova, Youngstown, Ohio.

A feature about the 1973-74 scholarship winners is planned for next month.

1975 Scholarship Program

All current AMA members who graduated from high school in 1974, or who will graduate in 1975, are invited to apply for a 1975 AMA scholarship in this ongoing program. Beyond AMA membership and time of graduation, the only requirement is that the applicant must have flown a model in competition sometime during the year prior to scholarship application submittal; to be considered for the 1975 program, applications must be received by May 31. To obtain a scholarship application, write to Academy of Model Aeronautics, 806 Fifteenth St., N.W., Washington, D.C. 20005; please enclose a pre-addressed and stamped envelope.

50,000 AMA Member Actually Is An Old-Timer

These pages in the December issue told that Robert A. Lockwood, Napa, Calif., was recorded by AMA HQ on July 23 as being the 50,000th member for 1974—a milestone figure which deserves more than passing mention. We'd like you to meet this man.

In responding to an inquiry for information, Lockwood says that he, like thousands of others, first built the Baby ROG designed by Merrill Hamburg and published in *American Boy Magazine*. This probably was in the early 30's. Marine Corps service in WW II, raising a family and then living in Mexico all joined forces to put a temporary halt to his modeling, but before this he recalls having built a Bay Ridge Models "Mike" with an Ohlson .23 engine—which he still has.

Born in Milwaukee, Wis., Lockwood spent his early life in Pelham, N.Y. In Mexico he was president and general manager of Distribuidora de Impresos, S.A., from which he presently is retired, a wholesale distributor of English language magazines, newspapers and books. He notes that included among the titles were *Flying Models*, *Model Airplane News*, *American Aircraft Modeler* and *R/C Modeler*. He and his wife, Ellen, are parents of two grown-up boys, Robert and Leigh.

A health problem slowed up Lockwood, age 58, about eight years ago; with many of his familiar activities being curtailed, this was a perfect time to rediscover modeling. "The challenge of RC proved fascinating," he said, "and I've been hooked ever since." His joining of AMA was to help establish contact with nearby flyers after having been out of the country for so many years.



"Today I am a fair-to-poor builder and a calamity as a pilot," Lockwood wrote. "What I build generally flies well enough until the instructor hands me the transmitter." He hopes that retirement will provide the time to improve his building and piloting techniques, and we're almost willing to bet that he exaggerates a bit.

We can't help but be pleased by some of the comments Lockwood made in a letter to Executive Director John Worth: "I think that congratulations are due to you and the AMA for the growth in membership. Milestones or not, healthy growth in membership is a positive indication of fulfillment of a genuine need. Modeling has been good for me, and the friendly help that I have received must be paid back in some way."

As a sidelight, AMA HQ closed out its membership books for 1974 showing an all-time high total—52,452!

Clemens Re-elected President

John Clemens, the incumbent, has received 4,867 votes to challenger Al Rabe's 2,844 in the election for 1975-76 AMA officers concluded on November 15. This will be Clemens' third two-year term as president. (There were 19 miscellaneous write-in votes for others.)

District Vice-President Results

II: John Byrne was elected with 750 votes to John Grigg's 410 and write-in candidate James O'Brien's 44. There were six votes for others.

IV: Incumbent John Spalding received 340 to John Thornhill's 227.

VI: Incumbent Glenn Lee received 470 to Bob Vojslavek's 367.

VIII: Incumbent Murry Frank received 364 to Galen Stephen's 304. There were two votes for others.

X: Incumbent Alex Chisolm received 766 to Steve Geraghty's 382. There were two votes for others.

This election was for the office of national president and vice-presidents of even-numbered AMA districts. The next election, toward the end of 1975, will be for national secretary-treasurer and VP's of odd-numbered districts for the 1976-77 term.



The most mail ever received ■ AMA HQ on ■ day came in following Veterans' Day—1,616 memberships altogether! Office Manager Earl Denny dumps mail sack for Mail ■ Supply Clerk Norma Curllings. ■ week later volume ■ still higher—2,014 memberships for ■ new one-day record. About 10% ■ members have signed up for 1975 ■ the same period ■ year ago.

This Is the Last Issue For 1974 Members

Only those who renewed membership by December 15 can be assured of receiving continuing issues of the publication—either the full *American Aircraft Modeler* or the "AMA News" reprint, depending upon the option desired. AMA members for 1974 (and also new members) who didn't pay 1975 dues by December 15 will likely miss the March magazine or reprint, and adult members will also miss the January *Monthly Mailing*—AMA's hot-line newsletter with expanded circulation in 1975. It's simply the mechanics involved; the March magazine and "AMA

News" reprint ■ mailed in January, but it's in December when copies have to be ordered and the mailing tapes have to be prepared. Similarly mailing tapes have to be prepared in December for the January *Monthly Mailing*.

For subsequent issues, it's necessary to get membership processing initiated as soon ■ possible—it's too costly and complicated to order extra magazines on speculation. If you haven't signed up yet for 1975 AMA membership, do it now in order to avoid losing any more service. If your dues payment is received by January 15, you will receive the April magazine or reprint, depending upon your choice, and adults will receive the February *Monthly Mailing*—all three of which are mailed in February.

CONTEST									
		1	2	3	4				
7	8	9							13
14	15				18	19	20		
				24	25	26	27		
	29	30	31						

Official Sanctioned Contests of the Academy of Model Aeronautics

Note: For quick response and as a favor to those staging, administering and directing the contest, be certain to send a stamped, self-addressed envelope along with your request to the listed Contest Director (CD) for additional information.

Jan. 4—Locust Valley L.I., N.Y. LIAMAC Indoor (Cat. I) Record Trials. Site: Friends Academy. J. Paillet CD. 30 Emerson Rd., Brookville, N.Y. 11545.

Jan. 10-12—Akron, Ohio Summit Conference Static Display Contest. Site: Summit Mall. E. Landis CD. 4907 Will Dr., Akron, Ohio 44319.

Jan. 18-19—Buckeye, Ariz. (AAA) 25th Annual Southwestern Regional FF (Cat. I), CL ■ RC Meet. Site: Buckeye Airport. E. Raphael CD. 3822 W. Brown St., Phoenix, Ariz. 85021.

Jan. 19—Opa Locks, Fla. (A) MIAMI Park & Rec. Indoor (Cat. II) Contest #4. Site: Goodyear Blimp Hangar. G. Myers CD. 13918 SW 90th Ave., Miami, Fla. 33157.

Jan. 19—Aurora, Colo. (A) MMM Indoor Meet. Site: Hinkley H.S. ■ Blubaugh CD. 1300 Chambers Rd., Aurora, Colo. 80010. Sponsor: Magnificent Mountain Men.

Jan. 25-26—Phoenix, Ariz. (AA) 4th Annual Southwestern RC Championships. Site: Aux. II, Beardsley, W. Cranston CD. 8823 N. 38th Dr., Phoenix, Ariz. 85019. Sponsor: Arizona RC Society.

Jan. 31-Feb. 2—Akron, Ohio (AA) 10th Annual Chapel Hill Show for Indoor Static Display-Judging-Outdoor Demonstrations. Site: Akron J. Yarger CD. 1100 Browning Ave. ■, Canton, Ohio 44720.

Feb. 2—Green Bay, Wisc. (A) Annual Polar Bear FF Contest. Site: Frozen Bay. R. Cowles, Jr. CD. 2424 Ducharme Ln., Green Bay, Wisc. 54301.

Feb. 2—Jamestown, N.Y. Flying Aces Winter Fly-for-Fun Meet. Site: Club Field W. Johnson CD. 62 Widrig Ave., Jamestown, N.Y. 14701.

Feb. 2—Ft. Lewis, Wash. (A) "Misery" Meet 15th Annual FF (Cat. II) Meet. Site: Harla Lake Prairie. D. Zipoy CD. 264—169th NE, Bellevue, Wash. 98008.

Feb. 9—Glastonbury, Conn. (AA) Winter Wings Indoor (Cat. I) Meet. Site: Glastonbury High School. G. Armstead CD. 89 Harvest Ln., Glastonbury, Conn. 06033.

Feb. 18—Aurora, Colo. (A) ■ Monthly Indoor Meet. Site: Hinkley H.S. D. McGhee CD. 1280 Elm, Denver, Colo. 80220. Sponsor: Magnificent Mountain Men.

Feb. 18—Plymouth, Mich. (A) ■ Annual Sno-Fli RC Meet. Site: Plymouth A. Slagle CD. 26314 Kilarton, Farmington, Mich. 48024.

Feb. 18—Opa Locks, Fla. (A) MIAMI Park ■ Rec. Indoor (Cat. II) Meet. Site: Goodyear Blimp Hangar ■, Myers CD. 13918 SW 90th Ave., Miami, Fla. 33157.

March 9—Anderson, Ind. (AA) C.I.A. 2nd Annual Indoor (Cat. II) Meet. Site: Anderson Sr. High School Gym. P. Sullivan CD. 3021 Spring Valley Ct., Anderson, Ind. 46011.

March 16—Denver, Colo. (A) Spring ■ Here Indoor Meet. Site: Hinkley H.S. J. Murphy CD. 2432 Astron Dr., Colorado Springs, Colo. 80906.

March 16—Opa Locks, Fla. (A) MIAMI Park ■ Rec. Indoor (Cat. II) Contest #6. Site: Goodyear Blimp Hangar. G. Myers CD. 13918 SW 90th Ave., Miami, Fla. 33157.

March 29—Locust Valley L.I., N.Y. LIAMAC Indoor (Cat. I) Record Trials. Site: Friends Academy. J. Paillet CD. 30 Emerson Rd., Brookville, N.Y. 11545.

April 13—Dayton, Ohio (A) Buzzin' Buzzards Combat CL Bash. Site: Municipal Flying Field R. Perry CD. 5016 Angelita Ave., Dayton, Ohio 45424.

April 16—Glastonbury, Conn. (AA) Spring Indoor (Cat. I) Flng. Site: Glastonbury High School. G. Armstead, Jr. CD. 89 Harvest Ln., Glastonbury, Conn. 06033.

April 20—Opa Locks, Fla. (A) MIAMI Park & Rec. Indoor (Cat. II) Contest #7. Site: Goodyear Blimp Base. G. Myers CD. 13918 SW 90th Ave., Miami, Fla. 33156.

ISSUES/ (Continued from page 92)

But on to an even more pervasive burning issue which Mr. Fraher calls to the front. Although a rehash of many past Editorials in all the magazines, the "toy" image of model aviation, coupled with unbusiness-like PR efforts, is still a millstone around our sport's neck. What can we do about the "ambience of immaturity that pervades our sport?"

AAM thinks that we can make a good start in giving our sport a better name by first getting it out of the hobby category. A recent AAM phone survey of hobby shop personnel, chosen

at random, asked for an off-the-cuff enumeration of "hobby" category items in stock (this included national chain stores which boast "Hobby Department" signs). Most of these sales and management personnel did *not* list anything of an aeromodeling nature, but plastic 049 Ukie ships as "hobby" items. It was obvious that "hobby" meant paint-by-the-number sets, flower arranging, toy soldiers, plastic models, etc., and was more akin to "toys." Almost all the respondents reported that legitimate aeromodeling supplies were a specialty, and were handled by specialty shops.

Acknowledging this, we should more honestly look at our merchandise, and ourselves, as comparable to other specialty sports, like tennis or golf. We are in a time of transition to the golf pro/course/shop, ski instructor/shop syndrome and might as well prepare to welcome it with open arms.

But we really aren't prepared for it, even in the small, but significant, things like our language. Mr. Fraher calls out many instances of a sport that perpetuates its juvenile image by its own terminology. To see a news headline about the U.S. Rat Race Championships, would cause most people to conjure up thoughts of something like Mark Twain's jumping frogs of Calaveras County, not sporty miniature aircraft in honest competition.

Let's give the national press at large and the public something that they can identify with. AAM, to this end, invites its readers to write and suggest names and appellations for our sport. AAM will foster and use any terms found mature and representative—not only in our pages, but will submit

these names as a formal proposal to the AMA. So, jot down your proposal. Give us the old name or language and your idea for what it should be, and we'll do our part to get modeling into a better verbal perspective.

Once our rule books, newsletters, magazines and other communications reflect an adult approach and attitude toward our sport, we can then develop PR programs that will sound inviting to the public.

Another thing that we can do is be honest in our attitude and opinions of

(Continued on page 102)

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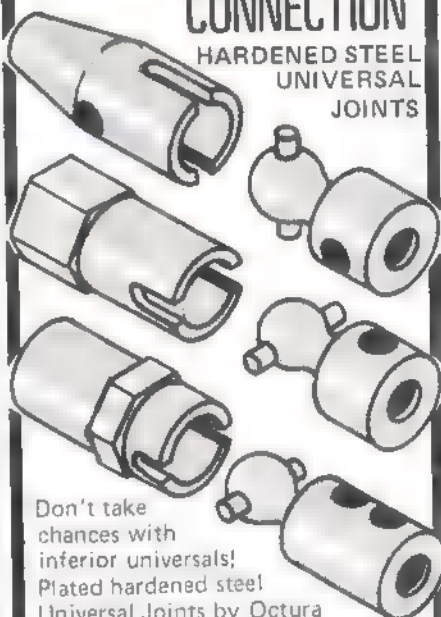
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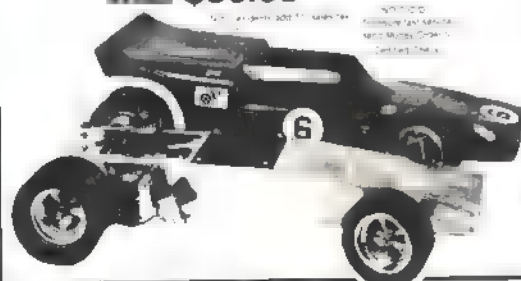
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ourselves, especially in the modeling press. I still can't understand why full-scale aviation magazines can write a monthly column on how an aviator got *killed* while flying one of their manufacturer's advertised products, while we, on the other hand, can't even properly rebut a newspaper report of someone getting killed with a model aircraft. It might be our childish "we can do no wrong" attitude that is keeping us from ever reaching maturity in sport.

Perhaps, when we decide to come to terms with these issues, we can start appreciating the fact that we can approach major companies for financial backing (remember the Plymouth contests) and start looking for the Pepsi Model Airplane Nationals, or the Gillette Masters Tournament (or maybe even the Reno Air Races for Model Aircraft).

Someday, model aircraft won't play second fiddle or a fill-in role at airshows or grand openings, etc. Our attitude

now is that any PR is good PR. That's naive and usually demeaning. I felt insulted when I saw the world's biggest air races here in Reno, with models being used only during the morning hours to keep the spectators' eyes occupied. We didn't even get announcements on the PA system, nor did the large, color-illustrated program of events even mention models. Spectators I talked to thought the planes were "cute" or "a nice novelty."

Finally, the modelers spoke with the Air Race officials, and the model demonstration on the last day was organized, promoted over the PA system, and coordinated with the entire day's programs. The officials were receptive and cooperative...and all it took was a little communication.

But good PR must start with the individual modeler. What does your next-door neighbor know about model aviation? Have you ever taken him to the

flying field? No, you don't have to make him convert to the sport, but a little education helps. Maybe it's because we do not make individual efforts like this which makes it difficult even to find a club field or a flier when you visit town. We're the best-kept secret going, even on the local level.

I was appalled when I talked to my neighbor about the NATS. He was ecstatic about...log-rolling! He had just seen the Canadian Log-Rolling Championships on TV's Wide World of Sports (there's that word again), and couldn't imagine how 900 guys with "toy" airplanes could possibly be more important or interesting than 32 heavyweights trying to see who could dunk whom by outrunning him on a log. We've come a long way baby, but we've got a longer way to go.

The best PR effort yet is AMA's film of the Doylestown Internats. It's great because its premise is that it is a film

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about *Champions*, not just fliers. There are villains and heroes. We root for Kraft to catch up, ■ hold our breath during the flight against Giezendanner. We're involved in ■ mature discussion with the team members. One just knows that this is big and important business. With an approach like that, the actors could be playing tiddly-winks, or even be flying toy airplanes, and it would come off fine.*

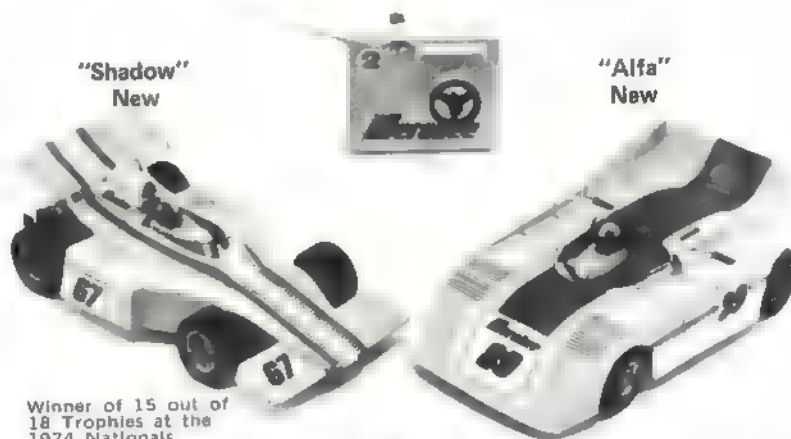
To conclude this lengthy commentary, I'll briefly answer some of Mr. Fraher's direct criticisms of *AAM*. First, "Getting Started in RC" is intentionally ongoing and usually repetitive on about ■ two-year cycle. This column is meant to appeal to the beginner, and there are new fliers every day. It makes no pretense of being a credo, as did the "Playboy Philosophy." (Note that we dropped our numbered series designation as of the January issue. We do respond to criticism.)

Concerning Mr. Fraher's "dream" magazine, we are already doing it. He mentions interviews with well-known model builders. The reader is referred to our FAI Pattern Editorial, as well as our profiles of Yoshioka, Rhett Miller and Bob Gieseke.

In the matter of profiles on prominent citizens, we tried ■ column by Paul Harvey, which now runs on ■ occasional basis in *AAM*. I feel that Mr. Harvey's input adds distinction to *AAM*, and it certainly doesn't hurt the hobby

*Several years ago, Wide World of Sports covered the NATS. Many technical and organizational problems proved it ■ flop. The Doylestown film is a good indication that we are due for a TV reappearance.

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when a nonmodeler picks up the magazine at the newsstand, and ■ name with which he can identify.

We also do an occasional piece "On the Distaff Side," our latest being "The Ms. and the Modeler" in the October issue.

Mr. Fraher's Guest Editorial is one that should not be dismissed lightly by either the press or the modelers. Although in this rebuttal I have left much unsaid, I sincerely hope that our readers have gained some insight not only into the model magazines, but into themselves in this Editorial exchange. I'll look forward to and welcome not only your letters (I'm sure that there will be many and I'll personally answer each one, ■ always), but also your suggestions for new terms and usages in the vocabulary of modeling.

MODELER MAIL

(Continued from page 3)

On the Brink

I would like to reply to some readers' letters commenting on the similarity between my Novi Arrow design (see *AAM*, June, 1974) and Dave Gierke's Novi Four.

Novi Arrow was certainly inspired by Dave's CL stunt design, and a credit does appear on my original plans, but this was unfortunately omitted when the plans were redrafted. Dave was aware of this development, ■ some time back I sent him a photo of the first version. This similarity is merely superficial as there is no relationship between size, moment arms, thrust lines, airfoil section, etc.

I have often looked to the CL scene

(Continued on page 104)

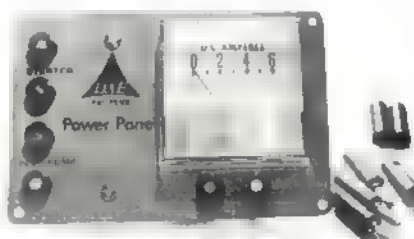


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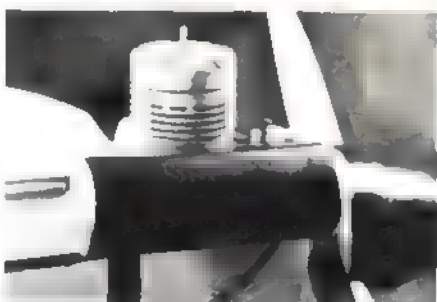
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for design inspiration, and the photo of my Little Arrow (below) may remind



you of Lew McFarland's "Shark."

Builders of the Novi Arrows may be interested in developments being incorporated in my latest "Super Arrow" which is now almost complete. It features ■ molded balsa fuselage, 90° air brakes on the TE of the wing, and an all-moving tailplane. As soon as flight tests ■ completed, and if the Editor has space, I may submit an update to the Novi Arrow article.

In the meantime, I would be pleased to hear from those of you building Novi Arrows. Write c/o AAM, or directly to P.O. Box 1502, Windhoek, 9100 South, West Africa.

John Brink
Windhoek, South West Africa

SUNSHINE STATE

(Continued from page 7)

Stearman won Stand-off Scale on Sunday.

October in Central Florida, with Orlando, Kissamee, Disney World, Silver Springs, Cypress Gardens, and biplanes is truly an experience for anyone unaccustomed to the semi-tropics. Crisp, cool mornings blend into squeaky-bright afternoons, with temperatures in the 80s. The unpolluted, "Kodachrome blue" skies, and palm trees and Spanish moss of the countryside (where the "industry" is groves of oranges and other citrus fruit) is ■ picture-book contrast to the typical, smoggy urban area where most of us necessarily live.

Next year, take ■ "biplane-break" and enjoy an exciting, new scale-like event on the outskirts of paradise—Central Florida's Biplane Championships.

MODELER'S BOOKSHELF

(Continued from page 14)

shots, many fine color studies, and cut-away sketches by John Batchelor provide all the background anyone needs to finish his next German warbird. Of particular value are the illustrations showing cockpit detailing of both aircraft. 102 pages. Aviation Book Co., \$12.95.

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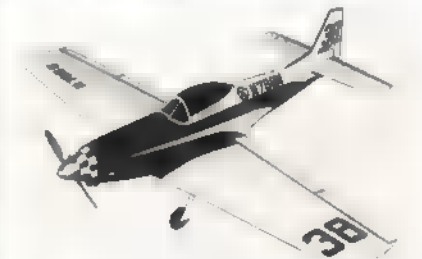
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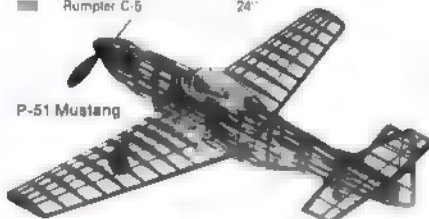
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202	British SE5A	24"
203	Nieuport 11	24"
204	Fokker DR-1 Tri Plane	20"
205	DeHavilland 4	27"
206	Rumpler C-6	24"

\$550 ea.



P-51 Mustang

Kit No.	Model	Wing Span
401	Messerschmitt BF	24.3 8
402	No. 109 P-51 Mustang	27.3 4
403	Supermarine Spitfire	27.5 8
404	Mitsubishi Zero	27.5 8
405	Curtiss P-40 Warhawk	25.3 4
406	Focke-Wulf FW	25.3 4

\$750 ea.



Sopwith Camel

Kit No.	Model	Wing Span
801	Sopwith Camel	36"
802	Cessna Skyhawk-172	36"
803	Stearman PT-17	28"

\$1000 ea.



SBD-3 Dauntless

Kit No.	Model	Wing Span
1001	Republic P47-D Thunderbolt	30.1 4"
1002	Junkers JU-87B Stuka	34.1 4"
1003	Douglas SBD-3 Dauntless	31.1 4"
1004	Vought F4U-4 Corsair	30.3 4"

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FAST(ER)

(Continued from page 40)

elevator, not jerked. This can be accomplished by setting up well before you get to the pylons. Altitude should remain fairly constant throughout the race. The best way to practice this is by concentrating on flying a good course while flying at a race.

If you fly a good course, using a good airplane and powerplant, there is no reason why you, too, shouldn't be in the winner's circle.

SPEED/PITTS

(Continued from page 48)

and fly it, using a nylon 7 x 6 prop and stunt fuel. As you learn to handle the airplane and engine, increase the nitro content of the fuel gradually by using K&B 1000, Cox Racing Fuel, or 40% rat race fuel. Blend these with speed fuel, until you can run the speed fuel direct. If the engine blows the glow plug, decrease the compression ratio by adding head gaskets. Try different brands of plugs; some will work better than others.

FLYING

The model is extremely stable and should present no problems in flying. The large wing gives plenty of maneuverability, and it will even loop if you are brave enough!

There are little, annoying things that always show up, and the solution to the problem is not always obvious. A small leak in the fuel tank or fuel lines will give erratic performance, periodically remove the tank, check for leaks, and replace all tubing. Use a filter, and clean it once in awhile. Some of the rubber quick-fills also leak, so each one has to be checked. Many times the seal will blow out of the glow plug, while the element is still good. The best way to learn about these things is to practice; get out and fly your model.

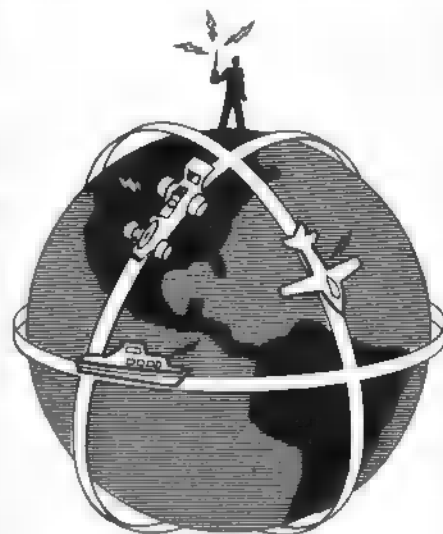
You ask why I, a speed flier, fly an event like Scale Racing? The answer is simple: It's fun!

SPEED/PIPED BEE

(Continued from page 48)

The engine is most important. The OPS 29 is imported by Shamrock Competition Imports. Addresses of all suppliers are listed at the end of this article. The TWA 29 is available from Performance Parts and Service, and Jett and

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Shannon produce their Schnuerle Tigre 29.

Monoline units are available from Bill's Miniature Engines, George Aldrich, and Merle Hoyt. If the older Stanzel unit is used, use the Class C unit for added strength and safety.

The speed pan shown on the plans is ■ Tatone. If another pan is used, be careful to adjust the wing position for proper balance. Drill and tap the pan for the engine. Use oil when you tap, to minimize tap breakage.

The best wood for the fuselage and wing is basswood. This can be ordered from Craftsman Wood Products, or John Smith. Pine is all right, but not as easily worked.

The wing is made first, since it is the most difficult part. The slab of 1/4 x 3 x 20" is first tapered in thickness, before cutting to shape. Mark the center section that gets glued to the fuselage. This section is left square, to give a reference for 0° incidence. From your mark, taper in a straight line to about 1/8" thickness at the tips, removing wood only from the bottom of the wing. This gives slight dihedral, but also helps keep the wing straight. Now saw and sand the wing to the elliptical surfaces. Before starting to cut the airfoil shape, mark a reference line on the center of the sawed edge with a ball-point pen. You ■ then carve the symmetrical airfoil. The reference line gives you a wing straight and free of warps.

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Locate the position of the hold-down bolts which go through the wing—you want to be sure they do not interfere with the monoline unit or the engine needle valve. Draw a line on the wing where you are going to split it. Saw it from end to end, using a fine blade in your jig saw or coping saw. This gives matching surfaces and does not distort the wood like a knife does.

Carve the grooves for line and monoline unit, using a drill, hand grinder, and knife. Flatten a piece of 1/8" ID brass tubing for the wing tip, and carve the slots to fit it. Make sure the end of your flying wire will pass easily through the brass tubing and the slot. Fuelproof the grooves before gluing the two pieces together. Use epoxy glue around the monoline unit. Apply a dab of Vaseline or grease, to prevent glue from getting into the monoline unit bearing. If this happens, there is no way to get it out, and you will never have self-neutralizing controls! This is very important!

Glue the two pieces of the wing together (with monoline unit and brass tubing in place), using rubber bands as clamps. Work a length of 1/16" wire in

and out of the wing slot to level off any lumps of glue. Hold a light near the monoline unit hole and look through the slot, to make sure there are no obstructions. Use fiberglass over the brass tubing to reinforce the tip.

The fuselage is made from a piece of basswood of 7/8" thick pine. Saw to the shape of the pan and then carve the outside of the shape shown. Carve or mill the slot for the wing. Make sure the bottom of the slot is parallel to the surface that mates to the engine pan to give you 0° incidence. Now carve the inside of the fuselage. There is no easy way to do this. Just attack it with knife, chisel, and grinding burrs! You can saw the hole for the engine and the area under the wing, but the rest comes hard.

When the fuselage shell fits easily over the engine and matches the pan, glue the wing in place with Titebond or white glue. Rotate the wing slightly so that the left wing tip is about 1/8" ahead of straight. Mark each wing tip and measure to the rear tip of the fuselage to get this dimension.

Saw a hole through a block of balsa for the cowl before cutting it to the

streamlined outline. Make the hole at least 1/16" larger than the engine cylinder. You need air for the engine, so carve a slot as shown to blow cool air against the bearing area. Excess air escapes around the cylinder and around the tuned pipe. This minimizes warping of the case due to uneven cooling, and most of the cooling is done by the fuel going through the engine anyway.

I use a piece of 1/4" basswood or pine for the top of the cowl, to give a little extra strength there. Bolt the fuselage and wing assembly to the pan, wrap a few layers of masking tape around the engine cylinder to center the cowl, and glue it in place with white glue. Rubber bands are used to clamp it in place. Sharpen the end of a 1/2" OD brass tube with a knife, and use it to cut the hole for the tuned pipe. Allow about 1/8" clearance around the pipe.

Making the V-tail is not as difficult as it looks. Cut the stab from 3/32" flat plywood. Make sure it is not warped. Round the leading edge, and file or sand the trailing edge level. Draw the centerline on it for future reference and draw

(Continued on page 110)



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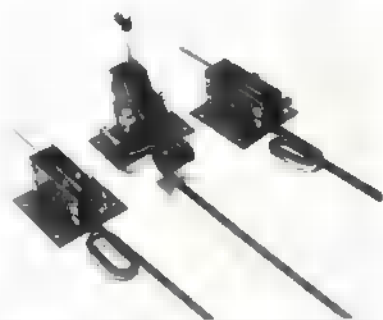
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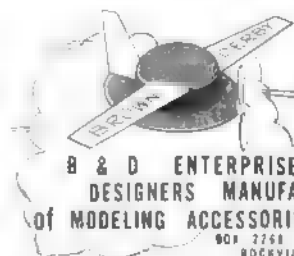


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the center notch outlines. Cut these notches with a pointed X-acto knife, working from both sides as soon as the point comes through for reference. A saw leaves too much clearance.

Liberal coat the mating parts with epoxy glue, not white glue, and glue the stab to an oversize 1/16" plywood platform, blocking the tips up about 1". When this has set, drill holes on your reference centerline for the stab hold-down bolts. Then bevel another narrow piece of 1/16" plywood for the top joint reinforcement, and glue it on. Now if you drill and tap the pan on center, the stab will not be cocked. Grind or file the oversized platform to match the pan.

Saw the elevator and round the mating edges for the hinges. Sew and glue the control horn to the elevator before attaching the cloth hinges. The wire horn is the best I have found for speed models and it is not too difficult to make. Form the "eye" by bending the wire around a scrap piece of pushrod wire. Fill the eye with soft solder and drill a hole for the pushrod.

Carve the fuselage crutch to blend smoothly into the spinner and cowl; then notch the fuselage where it goes over the stab. Finish the model with two coats of polyester resin, sanded with 220, 320 and 400 sandpaper. Then spray or brush on two or more coats of epoxy paint. Use some light color—it is difficult to see a dark colored model going that fast.

The tailpipe clamp was sawed from a piece of aluminum. The pipe expands when it gets hot, so allow about 3/32" end play. The O-ring seal in the exhaust stack is easily damaged by heat and abrasion. Obtain some "Viton" spares, which are more heat resistant, from an industrial supplier.

The best fuel tank I have found is the one shown, which uses pipe pressure for fuel feed. As the pipe kicks in, pressure is increased to give more fuel.

Glue a short length of 1/8" OD brass tubing in the pipe at its greatest diameter using E-POX-E glue. This can be obtained at discount stores and comes in two small cans. It is not expensive, and is quite heat resistant.

Check pressure and fuel lines often for leaks. The soft silicone tubing seems to "grow" holes, so use other tubing if available.

Test fly on 40% to 60% nitro fuel. Each time you fly, check the glow plug. If the element is gone, take the engine apart and clean it! Pay attention to what I am saying! The tremendous heat from the tuned pipe melts the element into little balls. These do not blow out of the engine. They sit on the piston and fall down into the crankcase when you land. It is quite easy to ruin the engine if you do not clean them out.

Test flying can be done without a pylon. It is mighty tough to try to catch a pylon when the model gets up to full speed. At contests, get in the pylon as soon as the model comes out of the dolly.

It took me 25 years of speed flying to reach 200 mph. With the information in this article, you should be able to do it this year! Good Luck.

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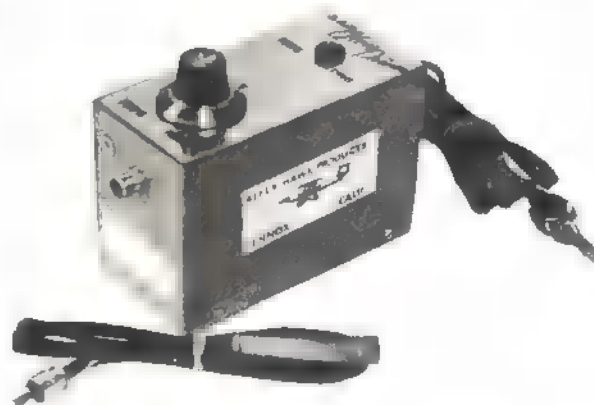
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FLYMOBILE

(Continued from page 62)

check the wing and tail incidences and balance point on the plan. Also check for warped wing or tail surfaces and remove any warps.

As a landplane, it takes off from grass runways with power to spare. If your field is rough, we suggest using larger wheels than those indicated on the plan. Even with four wheels, it is possible to steer during the takeoff run—but don't expect response like you get from a steerable nose wheel. If you hold a little up control, you will lighten the weight on the front wheels for easier steering.

The original Flymobile flew without the need for any trim, either as a landplane or seaplane. We tried some up-thrust on the motor to help water take-offs but it was not effective. The first

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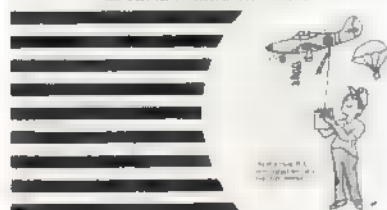
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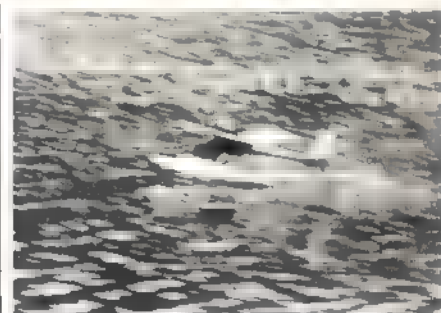
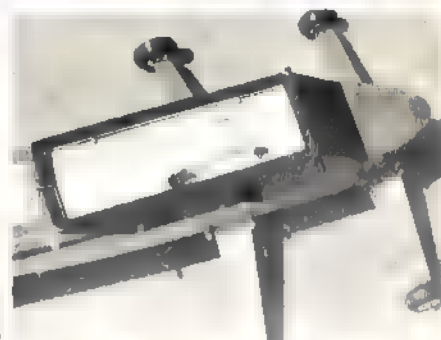
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floats will touch the water and the speed will lessen to the point that it will not take off. Don't forget to set the floats at 2° negative (tips pointing downward). This provides the extra angle of attack necessary for water takeoffs.

Good luck with Flymobile. It's a real change from conventional sportplanes and the differences provide for good ground and water handling, and easy control once you are in the air.

PHOTO CREDITS

Hobie Steele - Pages 6, 7
C. E. Roth - Page 14
Studios-Kamiski, Ltd. - Page 18
Don Sruhl - Pages 21, 22, 23, 24
Carl Weber - Pages 26, 27, 28, 29, 30
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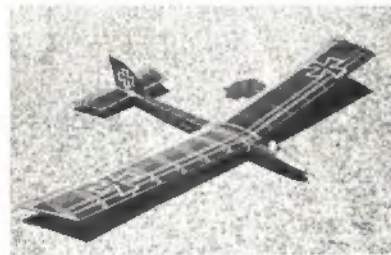
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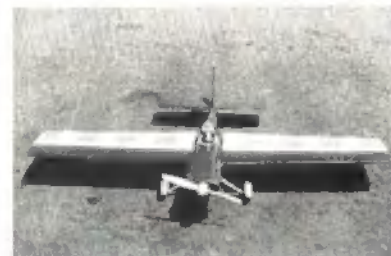
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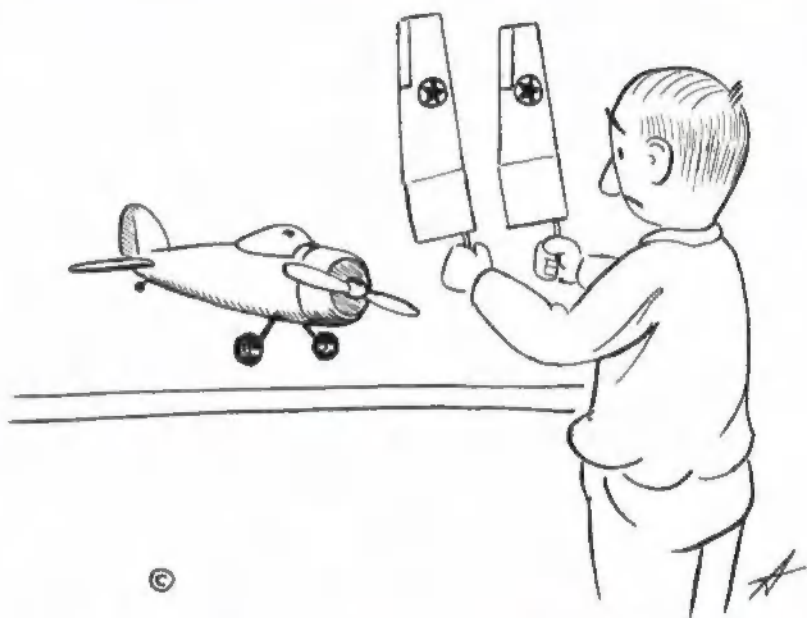
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